

<b>AWARD/CONTRACT</b>		<b>1. This Contract Is A Rated Order Under DPAS (15 CFR 700)</b>		<b>Rating</b> DOA4		<b>Page</b> 1 <b>Of</b> 33	
<b>2. Contract (Proc. Inst. Ident) No.</b> DAAE07-03-C-L090		<b>3. Effective Date</b> 2003APR21		<b>4. Requisition/Purchase Request/Project No.</b> SEE SCHEDULE			
<b>5. Issued By</b> TACOM AMSTA-AQ-ABGD PAM KOSTOWNY (586)574-8899 WARREN, MICHIGAN 48397-5000  HTTP://CONTRACTING.TACOM.ARMY.MIL  <b>e-mail address:</b> KOSTOWNP@TACOM.ARMY.MIL		<b>Code</b> W56HZV		<b>6. Administered By (If Other Than Item 5)</b> DCMA SAN ANTONIO 615 EAST HOUSTON STREET P.O. BOX 1040 SAN ANTONIO TX 78294-1040  <b>SCD</b> C <b>PAS</b> NONE <b>ADP</b> PT HQ0339		<b>Code</b> S4404A	
<b>7. Name And Address Of Contractor (No. Street, City, County, State, And Zip Code)</b> SOUTHWEST RESEARCH INSTITUTE 6220 CULEBRA RD P O DRAWER 28510 SAN ANTONIO TX 78228-0510  TYPE BUSINESS: Other Nonprofit				<b>8. Delivery</b> <input type="checkbox"/> FOB Origin <input checked="" type="checkbox"/> Other (See Below) SEE SCHEDULE			
				<b>9. Discount For Prompt Payment</b> Net 30 Days			
				<b>10. Submit Invoices (4 Copies Unless Otherwise Specified)</b>			<b>Item</b> 12
<b>Code</b> 26401		<b>Facility Code</b>		<b>To The Address Shown In:</b>			
<b>11. Ship To/Mark For</b> SEE SCHEDULE		<b>Code</b>		<b>12. Payment Will Be Made By</b> DFAS - COLUMBUS CENTER DFAS-CO/WEST ENTITLEMENT OPERATIONS P.O. BOX 182381 COLUMBUS, OH 43218-2381  Payment will be made by Electronic Funds Transfer		<b>Code</b> HQ0339	
<b>13. Authority For Using Other Than Full And Open Competition:</b> <input checked="" type="checkbox"/> 10 U.S.C. 2304(c)(1) <input type="checkbox"/> 41 U.S.C. 253(c)( )				<b>14. Accounting And Appropriation Data</b> SEE SECTION G			
<b>15A. Item No.</b> SEE SCHEDULE	<b>15B. Schedule Of Supplies/Services</b> CONTRACT TYPE: Cost-Plus-Fixed-Fee		<b>15C. Quantity</b>		<b>15D. Unit</b>	<b>15E. Unit Price</b>	<b>15F. Amount</b>
					KIND OF CONTRACT: Research and Development Contracts		
<b>15G. Total Amount Of Contract</b>						\$4,651,499.00	
<b>16. Table Of Contents</b>							
(X)	Section	Description	Page(s)	(X)	Section	Description	Page(s)
Part I - The Schedule				Part II - Contract Clauses			
X	A	Solicitation/Contract Form	1	X	I	Contract Clauses	24
X	B	Supplies or Services and Prices/Costs	4	Part III - List Of Documents, Exhibits, And Other Attachments			
X	C	Description/Specs./Work Statement	10	X	J	List of Attachments	33
X	D	Packaging and Marking	16	Part IV - Representations And Instructions			
X	E	Inspection and Acceptance	17		K	Representations, Certifications, and Other Statements of Offerors	
X	F	Deliveries or Performance	18				
X	G	Contract Administration Data	19		L	Instrs., Conds., and Notices to Offerors	
X	H	Special Contract Requirements	21		M	Evaluation Factors for Award	
Contracting Officer Will Complete Item 17 Or 18 As Applicable							
<b>17. <input checked="" type="checkbox"/> Contractor's Negotiated Agreement</b> (Contractor is required to sign this document and return 2 signed copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)				<b>18. <input type="checkbox"/> Award</b> (Contractor is not required to sign this document.) Your offer on Solicitation Number _____ including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award consummates the contract which consists of the following documents: (a) the Government's solicitation and your offer, and (b) this award/contract. No further contractual document is necessary.			
<b>19A. Name And Title Of Signer (Type Or Print)</b>				<b>20A. Name Of Contracting Officer</b> JOHN M. HOPFNER HOPFNERJ@TACOM.ARMY.MIL (586)574-7070			
<b>19B. Name of Contractor</b>		<b>19c. Date Signed</b>		<b>20B. United States Of America</b>		<b>20C. Date Signed</b> 2003APR21	
By _____ (Signature of person authorized to sign)				By _____ /SIGNED/ (Signature of Contracting Officer)			

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SECTION A - SUPPLEMENTAL INFORMATION

	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
A-1	TACOM	DISCLOSURE OF UNIT PRICE INFORMATION	DEC/2002

This constitutes notification pursuant to Executive Order 12600, Pre-Disclosure Notification Procedures for Confidential Commercial Information (June 23, 1987), of our intention to release unit prices in response to any request under the Freedom of Information Act, 5 USC 552. Unit price is defined as the contract price per unit or item purchased. We consider any objection to be waived unless the contracting officer is notified of your objection to such posting prior to submission of initial proposals.

[End of Notice]

A-2	52.204-4016 (TACOM)	TACOM-WARREN ELECTRONIC CONTRACTING	MAR/2001
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(a) TACOM is now operating in an electronic contracting environment. All TACOM solicitations and awards are now distributed on the TACOM Warren Business Opportunities web page (<http://contracting.tacom.army.mil/opportunity.htm>) and are no longer available in hard copy. The TDPs and other documents, when available electronically, will be an attachment or linked to the solicitation package on the web. Please see submission guidelines at <http://contracting.tacom.army.mil/userguide.htm> and <http://contracting.tacom.army.mil/ebidnotice.htm> for more information. Any requirements included in the solicitation take precedence over guidance found on the TACOM contracting web page.

(b) You may need to use special software to view documents that we post on the home page. This viewing software is freeware, available for download at no cost from commercial web sites like Microsoft and Adobe. In cases where such software is required, we provide a link from our page to the commercial site where the software is available. Once you arrive at the software developer's site, follow their instructions to download the free viewer. You then can return to the TACOM home page.

(c) You are required to submit your offer, bid, or quote electronically. See the provision entitled "Electronic Offers (or 'Quotes' or 'Bids') Required in Response to This Solicitation (or 'Request for Quotations')" for more specific information.

(d) Any award issued as a result of this solicitation will be distributed electronically. Awards posted on the TACOM Warren Business Opportunities web page represent complete OFFICIAL copies of contract awards.

(e) If you have questions or need help in using the Acquisition Center Home Page, call our Electronic Contracting Help Desk at (586) 574-7059, or send an email message to: [acqcenweb@tacom.army.mil](mailto:acqcenweb@tacom.army.mil)

(f) If you have questions about the content of any specific item posted on our home page, please call the buyer or point of contact listed for the item. Additional help is available to small businesses from Government-funded Electronic Commerce Regional Centers (ECRCs) to implement EDI. Information on ECRC is available at <http://www.ecrc.ctc.com>

[End of Clause]

A-3	52.204-4232 (TACOM)	PUBLIC ACTIVITY INVOLVEMENT	DEC/2002
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Subcontract opportunities under this solicitation and any resulting contracts are open to competition between Department of Defense activities and private firms. In addition, Army Industrial Facilities are available to sell manufactured articles or to perform work at such Facilities on behalf of Offerors, in certain circumstances and as permitted by law. Rock Island Arsenal, Watervliet Arsenal, Anniston Army Depot, Sierra Army Depot, and Red River Army Depot have expressed interest in securing subcontracting opportunities under this RFP. For information related to the capabilities of these facilities, and Points of Contact, see [www.gsie.army.mil](http://www.gsie.army.mil)

[End of Notice]

A-4	52.215-4854 (TACOM)	PAPERLESS ELECTRONIC RESPONSES REQUIRED IN RESPONSE TO THIS SOLICITATION/REQUEST	JUL/2002
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TACOM WILL NOT ACCEPT PAPER OFFERS IN RESPONSE TO THIS SOLICITATION/REQUEST. YOU ARE REQUIRED TO SUBMIT YOUR OFFER, BID, OR QUOTE VIA PAPERLESS ELECTRONIC MEDIA. SEE THE PROVISION ENTITLED "ELECTRONIC OFFERS (OR 'QUOTES' OR 'BIDS') REQUIRED IN RESPONSE TO THIS SOLICITATION (OR 'REQUEST FOR QUOTATIONS')" FOR MORE SPECIFIC INFORMATION.

[End of Clause]

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT									
0001	<p>SECTION B - SUPPLIES OR SERVICES AND PRICES/COSTS</p> <p><u>RIFTS</u></p> <p>NOUN: RIFTS TECHNOLOGY DEMONSTRATOR SECURITY CLASS: Unclassified</p> <p>Contractor shall furnish all the supplies and services to accomplish the task specified in Section C Scope of Work.</p> <p>Estimated Cost: \$4,452,900.00 Fixed Fee:     \$ <u>198,599.00</u> Total Cost:     \$4,651,499.00</p> <p>(End of narrative B001)</p> <p><u>Inspection and Acceptance</u> INSPECTION: Origin     ACCEPTANCE: Origin</p> <p><u>Deliveries or Performance</u></p> <table><tr><td>DLVR SCH</td><td></td><td>PERF COMPL</td></tr><tr><td><u>REL CD</u></td><td><u>QUANTITY</u></td><td><u>DATE</u></td></tr><tr><td>001</td><td>1</td><td>31-AUG-2005</td></tr></table> <p>\$     4,651,499.00</p>	DLVR SCH		PERF COMPL	<u>REL CD</u>	<u>QUANTITY</u>	<u>DATE</u>	001	1	31-AUG-2005	1	LO		\$ <u>4,651,499.00</u>
DLVR SCH		PERF COMPL												
<u>REL CD</u>	<u>QUANTITY</u>	<u>DATE</u>												
001	1	31-AUG-2005												
000101	<p><u>RIFTS</u></p> <p>NOUN: RIFTS PRON: E132C259EH     PRON AMD: 01     ACRN: AA AMS CD: 643804K4100 (AMOUNT: \$ 2,000,000.00)</p>													
000102	<p><u>RIFTS</u></p> <p>NOUN: RIFTS PRON: E132C260EH     PRON AMD: 01     ACRN: AB AMS CD: 654804L4100 (AMOUNT: \$ 2,651,499.00)</p>													
0002	<p><u>TECHNICAL DATA</u></p>													

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
A002	<p>SECURITY CLASS: Unclassified</p> <p>Technical Data as set forth in Contract Data Requirements List (DD Form 1423) hereinafter referred to as Attachment 004.</p> <p>(End of narrative B001)</p> <p><u>DATA ITEM</u></p> <p>NOUN: SAFETY ASSESSMENT RPT (SAR) SECURITY CLASS: Unclassified</p> <p><u>Packaging and Marking</u></p> <p><u>Inspection and Acceptance</u> INSPECTION: Destination ACCEPTANCE: Destination</p> <p><u>Deliveries or Performance</u> DOC SUPPL REL CD MILSTRIP ADDR SIG CD MARK FOR TP CD 001 3 DEL REL CD QUANTITY DEL DATE 001 1 SEE DD FORM 1423</p> <p>FOB POINT: Destination</p> <p>SHIP TO: <u>PARCEL POST ADDRESS</u> (Y00003) SEE NARRATIVE ON DD 1423</p>	1	LO	\$ ** NSP **	\$ ** NSP **
A003	<p><u>DATA ITEM</u></p> <p>NOUN: PERFORMANCE SPECIFICATION DOC SECURITY CLASS: Unclassified</p> <p><u>Packaging and Marking</u></p> <p><u>Inspection and Acceptance</u> INSPECTION: Destination ACCEPTANCE: Destination</p>	1	LO	\$ ** NSP **	\$ ** NSP **

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
A004	<p><u>Deliveries or Performance</u></p> <p>DOC SUPPL REL CD MILSTRIP ADDR SIG CD MARK FOR TP CD 001 3 DEL REL CD QUANTITY DEL DATE 001 1 SEE DD FORM 1423</p> <p>FOB POINT: Destination</p> <p>SHIP TO: <u>PARCEL POST ADDRESS</u> (Y00003) SEE NARRATIVE ON DD 1423</p> <p><u>DATA ITEM</u></p> <p>NOUN: FINAL REPORT SECURITY CLASS: Unclassified</p> <p><u>Packaging and Marking</u></p> <p><u>Inspection and Acceptance</u> INSPECTION: Destination ACCEPTANCE: Destination</p> <p><u>Deliveries or Performance</u></p> <p>DOC SUPPL REL CD MILSTRIP ADDR SIG CD MARK FOR TP CD 001 3 DEL REL CD QUANTITY DEL DATE 001 1 SEE DD FORM 1423</p> <p>FOB POINT: Destination</p> <p>SHIP TO: <u>PARCEL POST ADDRESS</u> (Y00003) SEE NARRATIVE ON DD 1423</p>	1	LO	\$ ** NSP **	\$ ** NSP **
A005	<p><u>DATA ITEM</u></p> <p>NOUN: CONCEPTUAL DESIGN DRAWINGS SECURITY CLASS: Unclassified</p>	1	LO	\$ ** NSP **	\$ ** NSP **



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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	<div>NOUN: LESSON GUIDES</div> <div>SECURITY CLASS: Unclassified</div> <div>Packaging and Marking</div> <div>Inspection and Acceptance</div> <div>INSPECTION: DestinationACCEPTANCE: Destination</div> <div>Deliveries or Performance</div> <div>DOC SUPPL</div> <div>REL CD MILSTRIP ADDR SIG CD MARK FOR TP CD</div> <div>001 3</div> <div>DEL REL CD QUANTITY DEL DATE</div> <div>001 1 SEE DD FORM 1423</div> <div>FOB POINT: Destination</div> <div>SHIP TO: PARCEL POST ADDRESS</div> <div>(Y00003) SEE NARRATIVE ON DD 1423</div>				



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B.1 Estimated Cost and Payment

B.1.1 The estimated cost for performance of the work required under this contract is \$4,452,900.00, which shall constitute the estimated cost for the purpose of the Contract Clause hereof entitled LIMITATION OF FUNDS.

B.1.2 The contractor will be paid for the fixed fee stated in Section B opposite CLIN 0001 for the performance of work under the contract and in accordance with the terms of the Contract Clause entitled FIXED FEE, (Mar 1997), FAR 52.216-8. The fixed fee together with the reimbursement of cost shall constitute full and complete consideration for the contractor's service in connection with the work required and performed under this contract.

B.1.3 Allowable cost shall be determined, and payment thereof shall be provided, in accordance with the Contract Clause hereof entitled ALLOWABLE COST AND PAYMENT.

\*\*\* END OF NARRATIVE B 001 \*\*\*

B.2 Payment

The contractor may submit public vouchers monthly for payment under this contract. The fee will be payable at the time of reimbursement of cost at the same rate to such cost as the total fee of this contract bears to the total estimated cost thereof, subject to any withholding pursuant to provisions of this contract.

\*\*\* END OF NARRATIVE B 002 \*\*\*

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SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

C.1. INTRODUCTION.

C.1.1 Scope:

This Statement of Work (SOW) describes research, prototype production, development and engineering services the contractor shall provide for the Rapidly Installed Fluid Transfer System (RIFTS). These services include Design and Fabrication of component Prototypes, Engineering Support, Safety and Environmental Assessment, Performance Specification, and Testing and Testing Support.

C.1.2 Objective:

The objective is for the contractor to build a full size Technology Demonstrator Model (TDM) of the RIFTS components, integrate and demonstrate all RIFTS components to work as a baseline RIFTS complete system. The baseline system is composed of a minimum of 5 miles of conduit with the associated Emplacement and Retrieval Devices (ERDs), at least one Automated Pumping Station (APS), and one Command and Control Module (C2M). The contractor shall include support equipment with the above hardware, consisting of a displacement and evacuation kit (to demonstrate the ability to displace fuel and evacuate the conduit prior to retrieval), and a Conduit Repair kit (to demonstrate field repairability) as described in the Performance Specification (Attachment 001, sections 3.3.2.2 and 3.3.2.1). Upon the completion of the TDM testing and demonstration, the contractor shall prepare a draft RIFTS performance specification for use by TACOM in the next developmental phase of the program.

C.2. REQUIREMENTS

The contractor shall establish and maintain management operations that include project management and system engineering management. Project management consists of those activities to plan, organize, and direct all work to accomplish the objectives of the contract, to control costs within the estimated contract cost, to identify impending problems (i.e., technical, schedule, cost) as early as possible, and to deliver data and hardware on schedule. System engineering management consists of those activities to control the total system development effort for the purpose of achieving an optimum balance of all system elements.

C.2.1 Project Management:

C.2.1.1 C/SSR Report

C.2.1.1.1 The contractor shall prepare and submit the Cost/Schedule Status Report (C/SSR) in accordance with (IAW) Data Item No. A001. The Contract Work Breakdown Structure (CWBS) as defined in C.2.1.2 shall be used by the contractor as the framework for managing and reporting project costs. The contractor shall report in writing to the Contracting Officer any change made to the cost and schedule management system which will affect the C/SSR data during the performance of the contract. The contractor shall provide an analysis and narrative explanation when the cost or schedule variance reported in the C/SSR for any CWBS element exceeds 10% over the costs identified in its cost proposal dated April 4, 2003. Each C/SSR narrative report shall also cover all program activities for the reporting period and shall provide a forecast of work to be accomplished during the upcoming period. Contents shall include status and progress towards all open milestones that are active or scheduled to become active according to the Program Milestone Chart the contractor presents at the Start of Work meeting.

C.2.1.2 Contract Work Breakdown Structure (CWBS) for RIFTS

C.2.1.2.1 The CWBS is provided below. Throughout contract performance, the contractor may propose changes to the CWBS to enhance its effectiveness in satisfying program objectives. The contractor shall further break down the CWBS to represent how it plans to accomplish the entire contract work scope and present the detail at the Start of Work meeting described in paragraph C.2.2.1.2. The contractor's detailed CWBS will serve as the framework for contract planning, budgeting and reporting of cost and schedule status to the Government.

CWBS

- A. Conduit Module, including:
  - (1) Conduit
  - (2) Emplacement and Retrieval Device (ERD)
- B. Automated Pumping Station (APS),
- C. Command and Control Module (C2M) (includes leak detection)
- D. Computer Based Planning Aid (reserved)
- E. Support Equipment,
- F. Program Management/System Engineering
- G. Training
- H. Test & Evaluation

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\*\*\* END OF NARRATIVE C 001 \*\*\*

C.2.2                    System Engineering

C.2.2.a The contractor shall analyze the system functions and performance requirements stipulated in the RIFTS System Performance Specification (Attachment 001). The contractor shall use a system approach in the accomplishment of design, engineering, development, and manufacturing efforts, which in turn shall help ensure that system requirements are met. System Engineering activities shall take into account maintenance, repair, operational support requirements and overall life cycle costs.

C.2.2.b The performance specification (Attachment 001) lists all the RIFTS requirements. However, for the scope of this contract, some of the RIFTS performance specifications are objectives, but not strict requirements to be demonstrated in the RIFTS TDM. The RIFTS TDM Requirement List (Attachment 002) identifies the RIFTS TDM requirements and objectives. Although the contractor is not required to build to the objective specification, it shall take both the required and objective specifications into its design considerations.

C.2.2.1 Technical Reviews.

As described in paragraphs C.2.2.1.2 through C.2.2.1.7 the contractor shall conduct formal technical reviews to provide the Government the means to assess the progress of the total technical effort and to address identified program issues and risks. Technical reviews shall be conducted at the contractor's facility; however, when jointly agreed upon between the contractor and the COTR, a technical review may be held at an alternative location. The minimum required reviews are described in paragraphs C.2.2.1.2 through C.2.2.1.8. However, the Government reserves the right to call informal reviews as deemed necessary during the course of this contract.

C.2.2.1.1 Resources and Materials.

The contractor shall provide the following resources and materials to conduct each review effectively:

- (a) Conference agenda.
- (b) Conference room(s) for approximately 15 personnel.
- (c) Applicable systems engineering data, specifications, drawings, manuals, schedules, and design data.
- (d) Mockups, breadboards, in-process hardware, and finished hardware.
- (e) Test methods and data.
- (f) Conference minutes.

C.2.2.1.2 Start of Work Meeting

The contractor shall conduct a Start of Work Meeting within 21 days after contract award at the contractor's facility. The contractor shall at a minimum provide program overview and a program milestone chart.

C.2.2.1.3 System Requirements Review (SRR)

The contractor shall conduct a SRR in conjunction with the Start of Work Meeting. The contractor shall present a high-level overview of system design and requirements at the SRR to ensure both the contractor's and the Government representatives have a clear understanding of all the technical requirements.

C.2.2.1.4 System Specification Review (SSR)

The contractor shall prepare and submit to the COTR component performance specifications for the APS, C2M, ERD and conduit components of the system. The contractor and the Government shall hold a SSR meeting (teleconference) 45 days after contract award to review each specification before it is released to potential subcontract bidders. The component performance specifications shall be submitted to the COTR electronically 1-2 days prior to the scheduled teleconference.

C.2.2.1.5 Integrated Baseline Review (IBR)

The contractor shall conduct an IBR at its facility within 60 days after contract award. The contractor shall present the contents and underlying assumptions of its time-phased performance measurement baseline to government representatives at the IBR to ensure that both the contractor and the Government representatives understand the programmatic requirements.

C.2.2.1.6 Preliminary Design Review (PDR)

The contractor shall host a PDR meeting approximately eight (8) months after contract award to present candidate options for RIFTS implementation on each of the RIFTS components, or on the specific component implementation designs. Each candidate option shall include recommendations and tradeoffs so that a decision to proceed can be made at the conclusion of the PDR meeting.

C.2.2.1.7 Critical Design Review (CDR)

The contractor shall conduct a CDR for each of the major RIFTS components at the completion of the detailed design effort and drawings for procuring or fabricating the components. The first CDR shall be held approximately eight (8) months after contract award and shall

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be concurrent with the PDR. The detailed designs from CDR review(s) serves as a basis for fabrication of the RIFTS elements.

C.2.2.1.8 Test Readiness Review (TRR)

The contractor shall conduct a TRR prior to the start of the contractor system-level testing of the RIFTS TDM.

C.2.2.2 Design Considerations

The contractor shall include following areas as an integral part of the system engineering design process and make recommendations regarding the level or standard necessary for each area and how to best attain them. Recommendations for these areas shall be presented in design reviews. Further, the contractor shall identify which of the following it is implementing in the RIFTS TDM and to what extent; those not implemented in the TDM shall be identified and described for a future production RIFTS and included in the final report.

- (a) Environmental protection and Corrosion prevention;
- (b) Health Hazard Assessments and Risk Mitigation;
- (c) Preservation, Packaging, and Packing;
- (d) Reliability, Availability, and Maintainability (RAM);
- (e) Safety (see C.2.2.4, below);
- (f) Security consideration;
- (g) Manpower and Personnel Integration (MANPRINT) (see C.2.2.3, below);
- (h) Supportability.

C.2.2.3 Human Factors Engineering (HFE).

The Contractor shall address the operating personnel and HFE requirements of the performance specification described in paragraph 3.6 of the Performance Specification in the PDR and CDR reviews. The Contractor shall address the following issues: manpower requirements, MOS and skill levels, use and manipulation of controls, operator and user accessibility to components and controls, workflow illumination, noise, storage for mission related items, operational compatibility with personal protective clothing and equipment, and component weight and lifting limitations. The Contractor shall demonstrate the adequacy of operator and user accessibility and layout of the RIFTS TDM within the confines of the employment vehicles described in 3.3.3.5 of the Performance Specification and immediate area during deployment.

C.2.2.4 Safety Engineering and Health Hazards

C.2.2.4.1 Safety Engineering Principles.

The contractor shall use MIL-STD-882D in determining whether safety engineering objectives of the Performance Specification paragraphs 3.5.1 and 3.5.2 are met. As a minimum, the contractor shall do the following:

- (a) Identify hazards associated with the system by conducting a safety analysis and hazard evaluation. Analysis shall include both operational and maintenance aspects of the RIFTS.
- (b) Eliminate or reduce significant hazards by appropriate design or material selection. If hazards to personnel cannot be avoided or eliminated, take steps to control or minimize those hazards.

C.2.2.4.2 Safety Assessment Report (SAR).

As a result of system safety analyses, hazard evaluations, and other contractor testing described in C.2.3.2, the contractor shall perform and document a safety and health hazard assessment. The safety (and health hazard) assessment shall identify all safety features of the hardware, system design and inherent hazards and shall establish special procedures and/or precautions to be observed by Government test agencies and system users. The contractor shall prepare the Safety Assessment Report IAW Data Item No. A002 and DI-SAFT-80102B. The contractor shall identify Health Hazards associated with the system and incorporate them into the SAR. The contractor shall use MIL-STD-882D in the preparation of the Safety Assessment Report and Health Hazard Assessment. In preparing the health hazard portion of the Safety Assessment Report, the contractor shall provide a description and discussion of each potential or actual health hazard issue for each subsystem or component. A health hazard is an existing or likely condition, inherent to the operation, maintenance, transport or use of materiel that can cause death, injury, acute or chronic illness, disability, or reduced job performance of personnel by exposure to physiological stresses. For each health hazard, the contractor shall include classification of severity and probability of occurrence, and when the hazards may be expected under normal or unusual operating or maintenance conditions. Include in the SAR copies of Material Safety Data Sheets (MSDS) for any hazardous materials incorporated into the system. Examples of hazards to be included in the report are fire prevention issues, electrical issues and noise. The contractor shall deliver a draft SAR to the email addresses identified in CDRL A002, 120 days prior to training described in paragraph C.2.4 of this contract. TACOM will review and provide comment within 30 days after receipt. The contractor shall deliver the final SAR to TACOM within 30 days after receipt of comments. The final SAR is subject to Government approval.

<b>CONTINUATION SHEET</b>	<b>Reference No. of Document Being Continued</b> <b>PIIN/SIIN</b> DAAE07-03-C-L090 <b>MOD/AMD</b>	<b>Page 13 of 33</b>
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C.2.2.5 Environmental Requirements

C.2.2.5.1 The Contractor shall not use asbestos, cadmium, hexavalent chromium, Class I or Class II Ozone-Depleting Substances, or other highly toxic or carcinogenic materials in the RIFTS design or in the RIFTS TDM without prior written Government approval. The contractor shall not use materials identified in the Registry of Toxic Effects of Chemical Substances, published by the National Institute for Occupational Safety and Health, as materials that will produce toxic effects via the respiratory tract, eye, skin or mouth. The contractor may use moderately toxic materials as defined in the registry, provided the design and control preclude personnel operating the RIFTS or RIFTS TDM from being exposed to environments in excess of that specified in 29 CFR 1910, Occupational Safety and Heath Standards.

C.2.2.5.2 The contractor shall ensure all aspects of the contract execution are in compliance with Federal, State and Local environmental regulations and requirements. The contractor shall immediately notify the Contracting Officer if the Government gives any direction that could result in permit violations.

C.2.2.5.3 The contractor shall prepare a Hazardous Material Report that at a minimum (i) identifies all hazardous materials and processes required for system fabrication and sustainment, and (ii) identifies those hazardous materials and processes for which non-hazardous substitute(s) may be available. The Hazardous Material Report shall be included as a separate section in the Final Scientific and Technical Report.

C.2.2.6 Fabrication

After the CDR described in paragraph C.2.2.1.7, the Contractor shall proceed to procure materials, fabricate and assemble RIFTS components and integrate them into a fully functional TDM baseline system. Fabrication shall be in accordance with the design configuration reviewed at the Critical Design Review. Any design changes from the approved configuration that are likely to degrade baseline system performance or increase cost shall be immediately reported to the COR for review and approval.

C.2.2.7 Technical Documentation

C.2.2.7.1 System Performance Specification

The contractor shall prepare a new System Performance Specification by updating the System Performance Specification (Attachment 001) requirements to include technical information from the lessons learned resulting from the accomplishments of this SOW. The specification shall state all necessary requirements in terms of performance. The specification shall specify all of the required functional characteristics of each component and shall specify all tests required to demonstrate achievement of those characteristics. The contractor shall use MIL-STD-961 to prepare the specification IAW Data Item No. A003. The specification shall contain a detachable appendix that serves as a companion document to the system performance specification that describes the rationale behind each requirement for future reference.

C.2.2.7.2 Final Report

Upon completion of the entire effort, contractor shall provide a report IAW Data Item No. A004 that addresses the technical approach, the advantages and deficiencies of the RIFTS TDM approach, the testing results, recommendations for improvements, and any other pertinent information that will help carry out the next developmental phase of RIFTS.

2.2.7.3 Drawings

Contractor shall furnish all as-built drawings (showing form, fit and function) used in performance for this contract, including those subcontracted components, to the COR IAW Data Item A005. Drawings developed by the contractor or subcontractors under this contract shall be delivered to the Government. Contractor format is acceptable.

\*\*\* END OF NARRATIVE C 002 \*\*\*

C.2.3 Testing

C.2.3.1 Test Plan

The contractor shall develop a comprehensive RIFTS test plan that provides sufficient testing of the TDM to adequately demonstrate all required TDM specifications are met. The contractor shall determine the extent of the test program and the resources required to support testing. The contractor shall identify and develop the test criteria, test procedures, data collection methods and data analysis techniques it will use to test the fully assembled RIFTS TDM. The contractor shall submit the draft test plan to the COTR IAW Data Item No. A006, 90 days prior to the TRR described in paragraph C.2.2.1.8. The Government has 30 days to review the draft test plan and provide comments. The contractor shall deliver the final test plan within five (5) days after receipt of Government comments.

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C.2.3.2 Contractor Testing

Contractor shall conduct performance testing IAW the Government approved test plan described in paragraph C.2.3.1. The contractor shall provide all necessary resources to support test. The contractor shall demonstrate and validate that the capabilities of every TDM system component are met IAW the System Performance Specification (Attachment 001) and the RIFTS TDM Requirement List (Attachment 002). In addition, contractor shall perform testing of parts, components, and assemblies as follows:

(a) Conduit: The contractor shall perform burst test and hydrostatic test in accordance with ASTM D380. Contractor shall also provide conduit capabilities for abrasion resistance, ozone resistance, and aging resistance in accordance with the applicable ASTM methods.

(b) Configuration: The contractor shall perform supporting engineering analysis as described in the Performance Specification to show the stacking capability of each module.

(c) Transportability: The contractor shall examine and assess the transportability characteristics of the RIFTS TDM to ensure requirements in the performance specification, paragraph 3.4.1, are satisfied.

C.2.3.3 Test Data Collection and Analysis.

The contractor shall conduct all system level testing in accordance with the approved test plan. The contractor shall collect and document all test data, test incidents, and corrective actions taken. The contractor shall analyze and evaluate the test data in accordance with the approved test plan and shall document the results in the Test Report Section of the Final Report.

\*\*\* END OF NARRATIVE C 003 \*\*\*

C.2.4 Training.

The contractor shall develop a course and training materials and conduct one class for operation and operator level maintenance procedures for the RIFTS TDM. Trainees may consist of Government civilian and military personnel. Class size will be approximately 30 people. Training will last approximately 5 days and will be held at Ft. Pickett, Virginia. The training shall include any necessary equipment to support TDM operation, and at a minimum cover the operation, Preventative Maintenance Checks and Services (PMCS) for operator and operator maintenance of the RIFTS TDM such as conduit repair. Each student shall be provided with a copy of any course material. The Government shall provide the start date of the class at least 30 days prior to the start of the class.

C.2.4.1 Training Materials

The contractor shall have the RIFTS TDM and the associated support equipment at the training facility, to include technical manuals, all lesson materials, training literature, training aids, special tools & test equipment, and all other tools necessary to disassemble and assemble the equipment at least five days prior to the start of training.

C.2.4.1.1 Training Course Outline

The contractor shall deliver a training course outline IAW Data Item No. A007 to TACOM to the email listed in the data item. The outline is a schedule of events and topics covered and shall include a breakdown of individual topics showing the time allotted, list materials required (TV, VCR, etc.), facility requirements, identify reference materials, list the type of instruction (practical exercise, lecture, demonstration, video, etc), and show tools required for each topic. Commercial format is acceptable.

C.2.4.1.2 Lesson Guide.

The contractor shall develop and deliver a Lesson Guide that covers both the operation and operator maintenance tasks IAW Data Item No. A008. The contractor shall deliver the lesson guide to TACOM to the email listed in the data item, and is due 45 days prior to training. Training Materials shall contain equipment and component description, functional data, operation, setup and disassembly, inspection, testing, troubleshooting, and safety procedures for the RIFTS TDM. After review and approval by the Government, the contractor shall provide a copy of the lesson guide to each student in the training class.

\*\*\* END OF NARRATIVE C 004 \*\*\*

C.2.5 Logistic Support

C.2.5.1 Logistic Support during User Demonstration.

The contractor shall provide all necessary materials and equipment for logistic support of one TDM user demonstration. The demonstration will be performed by trained Government personnel. The contractor shall also provide skilled maintenance personnel, tools and repair parts to identify and correct equipment failures that may occur during user demonstration. The contractor shall obtain

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replacement parts from the original supplier or authorized dealer by the most practical expedient means so that any malfunctioning TDM equipment is promptly repaired. The user demonstration will last approximately 5 days. It is anticipated that demonstration will be conducted at Ft. Pickett, Virginia.

C.2.5.2 Military Packaging Documentation Requirements

The contractor shall develop packaging requirements for the complete RIFTS TDM. The packaging system requirements are developed as part of the Shipment and Storage Instructions (S&SI).

C.2.5.2.1 Shipment and Storage (S&S) Instructions.

The Contractor shall develop and deliver S&SI in accordance with Data Item A009. The Contractor shall ensure those instructions are consistent with the transportability requirements stated in the system performance specification. The S&S instructions shall detail procedures required to prepare the TDM system for storage after it has been in operation. The contractor shall format the S&S instructions in accordance with Data Item A009, Special Packaging Instructions and deliver them to the email listed in the data item.

C.2.5.2.2 S&S processing instructions

- (a) Short Term Storage (180 days maximum in an unheated warehouse) for application when items are in transit.
- (b) Long term storage instructions. The Government will use these instructions to prepare a system for open storage (outdoor storage) for a period of up to 2 years. The Contractor shall ensure these instructions include any cyclic maintenance and exercising requirements necessary to prevent the system from deteriorating due to inactivity.

C.2.5.2.3 Compliance with Federal and Industry Transportation Requirements.

The Government may ship the TDM by truck, rail, plane or ship. The Contractor shall develop packaging requirements and shipment and storage instructions for these modes of transportation and identify any unique requirements for each mode of transport. This will allow the Government to process for shipment based on the intended mode of transport. The Contractor shall comply with the applicable codes and standards listed here: (1) Code of Federal Regulation Titles 29, 40 and 49, (2) International Maritime Dangerous Goods Code, for vessel transport, and (3) AFMAN 24-204, Preparing Hazardous Materials for Military Air Shipments. The Contractor shall include disassembly procedures to meet the requirements of the codes and standards mentioned above.

C.2.5.2.4 Packaging Instructions for Basic Issue Items.

The Contractor shall ensure that the shipment and storage instructions include packaging instructions for the Basic Issue Items (BII) (displacement and evacuation kit, conduit repair kit and any other support equipment that the contractor provides) and Components of the End Item (COEI), (the conduit, ERDs, APS and C2M.) The Contractor shall ensure the instructions require that BII shall be packed separately from the COEI.

C.2.5.2.4.1 BII and COEI Packaging.

The Contractor shall identify, in the TDM shipment and storage instructions, provisions for stowage location and security for the BII and COEI. Any HAZMAT COEI shall be packaged and shipped separately from the system IAW paragraph C.2.5.2.3 of the SOW. Packing requirements of any HAZMAT COEI will vary depending on mode of transportation and packaging requirements shall be stated for each mode. The Contractor shall ensure the stowage locations shall deter pilferage and shall not interfere with lifting, tie down or other transportation handling requirements.

C.2.5.2.4.2 Updates and Changes to Shipment and Storage Instructions.

The Contractor shall revise the shipment and storage instructions to reflect any TDM design changes that affect the system's shipment configuration, weight, or transportability. The Contractor shall also provide revisions to the shipment and storage instructions for each logistics change affecting packaging instructions for BII or COEI. The contractor shall deliver the revised shipment and storage instructions pursuant to A009.

C.2.5.2.4.3 Validation of Shipment and Storage Instructions.

The Contractor shall validate both long term and short-term shipment and storage instructions. The purpose of validation is to verify the adequacy of the preservation, packaging, packing and stowage of the TDM and its BII/COEI, preservation procedures for shipment and storage, and the cyclic maintenance requirements for systems in long-term storage. The TACOM Packaging representative will verify and witness validation procedures. The Contractor shall notify the TACOM Packaging representative listed in block 16 of data item A009 14 days prior to scheduled verification.

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SECTION D - PACKAGING AND MARKING

D.1 Marking

D.1.1 All technical data deliverable under this contract shall be identified by the prime contractor, the name and address of the prime contractor, and where applicable, the name and address of the subcontractor who generated the data.

D.1.2 All hardware deliverables shall be marked with the contractor's name, address, FSCM and the prime contract number.

\*\*\* END OF NARRATIVE D 001 \*\*\*



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SECTION E - INSPECTION AND ACCEPTANCE

	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
E-1	52.246-8	INSPECTION OF RESEARCH AND DEVELOPMENT -- COST-REIMBURSEMENT	MAY/2001
E-2	52.246-4024 (TACOM)	SUBSTITUTING COMMERCIAL TEST RESULTS FOR REQUIRED CONTRACT TESTS	APR/2000

(a) GENERAL. At your request, we may delete all or some of the Government or contractor conducted tests required by this contract or order, under the following conditions:

- (1) You have (or your supplier has) previously supplied the identical item to us and we've accepted it, or:
- (2) You have commercial test reports, performance data, analytical data, or vendor reports demonstrating that the item you will be furnishing us meets the contract requirements.

(b) HOW TO SUBMIT A TEST-DELETION REQUEST.

(1) BEFORE CONTRACT AWARD - Submit your request along with your offer in response to our solicitation. Make sure that your offer includes an alternate price (that reflects how your offered price would change if we approve your request to delete the specified tests). If we approve your request to delete test requirements or substitute commercial testing procedures, we will evaluate your offer at the alternate price submitted with your request. If you don't submit an alternate price with your request, we'll evaluate your offer at the price you indicated in the Schedule. No adjustments will be made to the price after contract award.

(2) AFTER CONTRACT AWARD - Send your request to the buyer identified on the face page of the contract within 45 days after contract award.

- (3) ALL REQUESTS MUST -
  - identify the test(s) you want deleted;
  - state the basis for your request;
  - include a list of configuration changes made;
  - demonstrate that you meet the conditions in paragraph (a)(1) or (a)(2) of this clause; and
  - include an alternate price per paragraph (b)(1) above, if you make your request prior to award; or
  - include proposed amount of equitable adjustment, if you make your request after award.

(c) SUPPORTING DATA. If we agree to delete a test or tests, you must keep the data you used to support your request for four years from the day we approved your request. You must provide us with such data if we ask for a copy.

(d) CONTRACT ADJUSTMENT. If we agree to delete a test or tests after contract award, we may negotiate an equitable adjustment in the contract price. Any such negotiation will be conducted using the rules given in the CHANGES--FIXED PRICE clause, FAR 52.243-1.

[End of Clause]

E-3 Inspection and Acceptance of Data

Inspection and acceptance of all data deliverable under this contract shall be made at Destination by the Contracting Officer or his duly authorized representative. The determination that the data are complete and conform to the requirements of the contract will be made by the Contracting Officer's Representative (COR), to assure the work and the results thereof are in accordance with the terms of the contract.

E-4 Inspection and Acceptance of Hardware

Inspection and acceptance of hardware deliverable under this contract shall be made at Destination by the Contracting Officer or his duly authorized representative. The determination that the hardware conforms to the requirements of the contract will be made by the Contracting Officer's Representative (COR), to assure the hardware is in accordance with the terms of the contract.

SECTION F - DELIVERIES OR PERFORMANCE

	Regulatory Cite	Title	Date
F-1	52.242-15	STOP WORK ORDER--(ALTERNATE I dated APR 1984)	AUG/1989
F-2	52.247-34	F.O.B. DESTINATION	NOV/1991
F-3	52.247-48	F.O.B. DESTINATION--EVIDENCE OF SHIPMENT (DEVIATION)	FEB/1999

F.4 DATA

F.4.1 The contractor shall submit all reports electronically in accordance with the Contract Data Requirements List (CDRL), (DD Form 1423), Exhibit A, to the following address:

lireb@tacom.army.mil  
and  
kostownp@tacom.army.mil

F.4.2 All data items required hereunder that cannot be submitted electronically, shall be delivered FOB Destination in accordance with the Contracts Data Requirements List (CDRL), (DD Form 1423), Exhibit A, to the following address:

Commander  
US Army Tank-automotive and Armaments Command  
ATTN: AMSTA-TR-D  
Warren, Michigan 48397-5000

F.5 HARDWARE:

F.5.1 The RIFTS TDM shall be delivered FOB: Destination to Ft. Pickett, and shall be delivered immediately after the user demonstration described in C.2.5.1 of this contract.

\*\*\* END OF NARRATIVE F 001 \*\*\*

F-6 DURATION OF PERFORMANCE:

F.6.1 All work required under this contract, including submission of the final version of all data deliverables, shall be completed within twenty-eight (28) months after contract award.

F.6.2 See Contract Data Requirements List, Attachment 004.

\*\*\* END OF NARRATIVE F 002 \*\*\*

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SECTION G - CONTRACT ADMINISTRATION DATA

\* \* G.1 CONTRACTOR: SPECIAL BILLING INSTRUCTIONS: \* \*

G.1.1 The Contractor shall bill to the six-digit Sub-Line Item Number (SLIN) level and ACRN under the four-digit Contract Line Item Number (CLIN), see Section B, for which the work effort was performed.

G.1.2 If multiple SLINs exist on the same four-digit major CLIN, the Contractor shall determine which six-digit SLIN contains the oldest fiscal year money and invoice against the SLIN containing the oldest money, until fully billed.

G.1.3. To determine the fiscal year of funds, refer to the "Job Order Number" (JON) column that applies to ALL funding under the four digit CLIN, as shown in Section G - Contract Administration Data. The first digit of the JON represents the fiscal year. (For example, CLIN 0001 is funded by SLINs 000101 and 000102. If JON: 22C334 is associated with 000101 and JON: 32C205, associated with 000102, SLIN 000101 is FY 2002 funding and shall be invoiced prior to invoicing against SLIN 000102, which is FY 2003 funding.)

\* \* G.2 DFAS: SPECIAL PAYMENT INSTRUCTIONS: \* \*

DFAS will make payments as billed by the contractor.

\*\*\* END OF NARRATIVE G 001 \*\*\*

								JOB		
LINE	PRON/	OBLG						ORDER	ACCOUNTING	OBLIGATED
ITEM	AMS CD	ACRN	STAT	ACCOUNTING CLASSIFICATION				NUMBER	STATION	AMOUNT
000101	E132C259EH	AA	2	21	32040000031C1C09P643804255Y	S20113		32C259	W56HZV	\$ 2,000,000.00
	643804K4100									
000102	E132C260EH	AB	2	21	32040000031C1C09P654804255Y	S20113		32C260	W56HZV	\$ 2,651,499.00
	654804L4100									
									TOTAL	\$ 4,651,499.00

SERVICE						ACCOUNTING		OBLIGATED
NAME	TOTAL BY ACRN	ACCOUNTING CLASSIFICATION				STATION		AMOUNT
Army	AA	21	32040000031C1C09P643804255Y	S20113		W56HZV	\$	2,000,000.00
Army	AB	21	32040000031C1C09P654804255Y	S20113		W56HZV	\$	2,651,499.00
								TOTAL \$ 4,651,499.00

	Regulatory Cite	Title	Date
G-1	52.242-4016 (TACOM)	COMMUNICATIONS	MAY/2000

(a) Communications on technical matters pertaining to the contract shall be direct between the contractor and the Technical Representative. Communications for the Technical Representative shall be addressed to:

Name: Rebecca Li  
e-mail: lireb@tacom.army.mil

(b) The Administrative Contracting Officer's (ACO) name and email address are also provided if known at this time:

ACO: Ida Ramirez  
e-mail: Ida.Ramirez@dcma.mil

(c) Please see the appointment letters prepared at time of contract award for functions the Technical Representative and ACO will perform on this contract.

[End of Clause]

G-2	252.201-7000	CONTRACTING OFFICER'S REPRESENTATIVE	DEC/1991
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(a) Definition. Contracting Officer's Representative means an individual designated in accordance with subsection 201.602-2 of the Defense Federal Acquisition Regulation Supplement and authorized in writing by the contracting officer to perform specific technical or administrative functions.

(b) If the Contracting Officer designates a contracting officer's representative (COR), the Contractor will receive a copy of the written designation. It will specify the extent of the COR's authority to act on behalf of the contracting officer. The COR is not authorized to make any commitments or changes that will affect price, quality, quantity, delivery, or any other term or condition of the contract.

[End of Clause]

G-352.232-4005INVOICE INFORMATION REQUIREMENTJAN/1988

(TACOM)

On each payment request submitted, the Contractor shall identify each affected Contract Line Item Number (CLIN), sub-CLIN, and/or work directive, together with the related dollar amounts. This requirement does not diminish or restrict any other requirement of this contract.

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SECTION H - SPECIAL CONTRACT REQUIREMENTS

	Regulatory Cite	Title	Date
H-1	252.203-7002	DISPLAY OF DOD HOTLINE POSTER	DEC/1991
H-2	252.204-7002	PAYMENT FOR SUBLINE ITEMS NOT SEPARATELY PRICED	DEC/1991
H-3	252.205-7000	PROVISION OF INFORMATION TO COOPERATIVE AGREEMENT HOLDERS	DEC/1991
H-4	252.211-7000	ACQUISITION STREAMLINING	DEC/1991
H-5	252.225-7001	BUY AMERICAN ACT AND BALANCE OF PAYMENTS PROGRAM	MAR/1998
H-6	252.225-7002	QUALIFYING COUNTRY SOURCES AS SUBCONTRACTORS	DEC/1991
H-7	252.225-7009	DUTY-FREE-ENTRY--QUALIFYING COUNTRY SUPPLIES (END PRODUCTS AND COMPONENTS)	AUG/2000
H-8	252.225-7010	DUTY-FREE ENTRY--ADDITIONAL PROVISIONS	AUG/2000
H-9	252.227-7036	DECLARATION OF TECHNICAL DATA CONFORMITY	JAN/1997
H-10	252.227-7037	VALIDATION OF RESTRICTIVE MARKINGS ON TECHNICAL DATA	SEP/1999
H-11	252.231-7000	SUPPLEMENTAL COST PRINCIPLES	DEC/1991
H-12	252.235-7011	FINAL SCIENTIFIC OR TECHNICAL REPORT	SEP/1999
H-13	252.246-7000	MATERIAL INSPECTION AND RECEIVING REPORT	MAR/2003
H-14	252.246-7001	WARRANTY OF DATA	DEC/1991
H-15	252.227-7039	PATENTS -- REPORTING OF SUBJECT INVENTIONS	APR/1990

The Contractor shall furnish the Contracting Officer the following:

(a) Interim reports every twelve (12) months (or such longer period as may be specified by the Contracting Officer) from the date of the contract, listing subject inventions during that period and stating that all subject inventions have been disclosed or that there are no such inventions.

(b) A final report, within three (3) months after completion of the contracted work, listing all subject inventions or stating that there were no such inventions.

(c) Upon request, the filing date, serial number and title, a copy of the patent application and patent number, and issue data for any subject invention for which the Contractor has retained title.

(d) Upon request, the Contractor shall furnish the Government an irrevocable power to inspect and make copies of the patent application file.

(End of clause)

H-16	52.204-4005 (TACOM)	REQUIRED USE OF ELECTRONIC CONTRACTING	DEC/2002
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(a) All contract awards, modifications and delivery orders issued by TACOM will be issued electronically. The contractor has the option to receive these actions either via the Worldwide Web (WWW) or Electronic Data Interchange (EDI). Many provisions and clauses appear "by reference," meaning only clause titles and regulation site are listed; their full texts can be found at the website <http://farsite.hill.af.mil/>

(b) In order to be eligible to receive an award under this solicitation, the successful offeror must be registered with the Department of Defense (DOD) Central Contractor Registration (CCR). The CCR registration process may be done electronically at the World Wide Web (WWW) site: <http://www.ccr2000.com>. (In order to be registered to use EDI, you must use the long form for registration. Certification information, including information on the EDI 838 TPP, must be furnished to the Contracting Officer within 60 calendar days after contract award to complete networking requirements within the Government.)

(c) Worldwide Web Distribution. The contractor will receive an electronic Notice of the Award, Modification, or Delivery Order via e-mail. If you choose the WWW option, you must download the file from the appropriate TACOM webpage:

Warren: [http://contracting.tacom.army.mil/awards\\_official.htm](http://contracting.tacom.army.mil/awards_official.htm)  
Rock Island: <http://aais.ria.army.mil/AAIS/AWDINFO/index.htm>  
Picatinny: <http://procnet.pica.army.mil/Contracts/Index.htm>  
Red River Army Depot: <http://www.redriver.army.mil/contracting/Awards>  
Anniston Army Depot: <http://www.anadprocnet.army.mil>

(d) Electronic Data Interchange. If you choose to receive contract awards, modifications and delivery orders through EDI, they will be delivered electronically via the Federal Acquisition Network (FACNET). Federal Standard Version 3050 of Standard X12 from the American National Standards Institute (ANSI) will be used as the format for these electronic transactions.

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(1) You must complete the EDI 838 Trading Partner Profile, and must agree (i) to subcontract with a DoD certified VAN or Value Added Service (VAS) provider, or (ii) to become DoD certified as a Value Added Network (VAN). The EDI 838 Training Partner Profile is contained in the basic CCR registration form and includes portions of the registration form which are titled "Optional".

(2) You must select a VAN from the official DoD approved list. DoD Certified VANs are listed at <http://www.acq.osd.mil/ec/ecip/index.htm> . If your VAN is later removed from the official list, or if you voluntarily drop your initially selected VAN, then you must switch to a VAN that remains on the official DoD approved list. You must maintain an active account on a DoD approved VAN for the entire duration of the contract, beginning no later than the 60th day after award.

(e) Unless otherwise specified elsewhere in the contract, all data items you are required to provide under this contract must be submitted electronically. Acceptable formats include:

- (1) Microsoft\* 97 Office Products (TACOM can currently read OFFICE 97\* and lower.): Word, Excel, Powerpoint, or Access
- (2) 100 OR 250 MEGABYTE ZIP\*-DISK, 3 1/2 INCH DISK, OR 650 MEGABYTE CD ROM
- (3) E-MAIL (Maximum size of each e-mail message is be three and one-half (3.5) megabytes).
- (4) Other electronic formats. Before submitting your data in any other electronic format, please e-mail the buyer identified on the face of the contract, with e-mail copy-furnished to [amsta-idq@tacom.army.mil](mailto:amsta-idq@tacom.army.mil), to obtain a decision as to the format's acceptability. This e-mail must be received by the buyer not later than ten calendar days before the required data submission date.

NOTE: The above formats may be submitted in compressed form using self-extracting files.

(f) Additional information can be obtained by sending a message to: [acqcenweb@tacom.army.mil](mailto:acqcenweb@tacom.army.mil) or by calling (586) 574-7059.  
[End of Clause]

H-17	52.216-4008	STATUS OF FUNDS ON COST REIMBURSEMENT CONTRACTS/CLINS	JUN/1989
	(TACOM)		

(a) The Contractor shall review the funding as it relates to work performed on the cost-reimbursement Contract Line Item Numbers (CLINs) under this contract and shall provide to the Procuring Contracting Officer (PCO) a written determination of what, if any, funds are excess to requirements (leaving a reasonable amount for final overhead rate negotiations and other reasonably predicted requirements) and are available for deobligation. This review shall be coordinated with the Administrative Contracting Officer (ACO), and the written determination shall be accomplished within 120 days of completion of performance under the CLIN. The report shall be prepared in terms of dollars available per Purchase Request Order Number (PRON), unless requested otherwise by the PCO.

(b) This report may be requested in writing by the PCO on additional occasions during the course of performance of work on cost-reimbursable CLINS contained in this contract. On such occasions, the written report shall be provided to the PCO within 14 days of Contractor receipt of the written request.

(End of clause)

H-18	52.246-4026	LOCAL ADDRESSES FOR DD FORM 250	MAR/2002
	(TACOM)		

(a) The contractor must provide a copy of each Material Inspection and Receiving Report (DD 250) pertaining to this contract, to the addresses given below, using either of the following methods:

- (1) Our first preference is for you to use electronic mail (e-mail), using the following e-mail address:  
  
DD250@tacom.army.mil
- (2) Our second preference is for you to use data facsimile (datafax) transmission, using this fax number:  
  
(586) 574-7552 and use "DD250 mailbox" in the "to:" block of your fax cover or header sheet.

In either method, do not mix DD250s from more than one contract in a single transmmision. That is, you may submit multiple DD250s in a single transmission, but they must all be against the same contract.

(b) These copies meet the requirements for the Purchasing Office copy and the Army Inventory Control Manager copy listed in tables 1 and 2 of DFARS Appendix F.

(c) The DD250 form may be found, in three different formats, on the World Wide Web at <http://web1.whs.osd.mil/icdhome/DD-0999.htm>

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[End of Clause]

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SECTION I - CONTRACT CLAUSES

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this address: <http://farsite.hill.af.mil/>

[End of Clause]

	Regulatory Cite	Title	Date
I-1	52.202-1	DEFINITIONS	DEC/2001
I-2	52.203-3	GRATUITIES	APR/1984
I-3	52.203-5	COVENANT AGAINST CONTINGENT FEES	APR/1984
I-4	52.203-6	RESTRICTIONS ON SUBCONTRACTOR SALES TO THE GOVERNMENT	JUL/1995
I-5	52.203-7	ANTI-KICKBACK PROCEDURES	JUL/1995
I-6	52.203-8	CANCELLATION, RESCISSION AND RECOVERY OF FUNDS FOR ILLEGAL OR IMPROPER ACTIVITY	JAN/1997
I-7	52.203-10	PRICE OR FEE ADJUSTMENT FOR ILLEGAL OR IMPROPER ACTIVITY	JAN/1997
I-8	52.203-12	LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS	JUN/1997
I-9	52.204-4	PRINTING/COPYING DOUBLE-SIDED ON RECYCLED PAPER	AUG/2000
I-10	52.209-6	PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT	JUL/1995
I-11	52.215-2 (ALT II)	AUDIT AND RECORDS - NEGOTIATION (ALTERNATE II--APR 1998)	JUN/1999
I-12	52.215-8	ORDER OF PRECEDENCE--UNIFORM CONTRACT FORMAT	OCT/1997
I-13	52.215-10	PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA	OCT/1997
I-14	52.215-12	SUBCONTRACTOR COST OR PRICING DATA	OCT/1997
I-15	52.215-14	INTEGRITY OF UNIT PRICES (ALTERNATE I, (OCT 1997))	OCT/1997
I-16	52.216-7	ALLOWABLE COST AND PAYMENT note: Delete from paragraph (a) the words SUBPART 31.2 and substitute SUBPART 31.7	FEB/2002
I-17	52.216-8	FIXED FEE	MAR/1997
I-18	52.219-8	UTILIZATION OF SMALL BUSINESS CONCERNS	OCT/2000
I-19	52.219-9	SMALL BUSINESS SUBCONTRACTING PLAN	JAN/2002
I-20	52.219-16	LIQUIDATED DAMAGES - SUBCONTRACTING PLAN	JAN/1999
I-21	52.222-1	NOTICE TO THE GOVERNMENT OF LABOR DISPUTES	FEB/1997
I-22	52.222-4	CONTRACT WORK HOURS AND SAFETY STANDARDS ACT--OVERTIME COMPENSATION	SEP/2000
I-23	52.222-19	CHILD LABOR--COOPERATION WITH AUTHORITIES AND REMEDIES	SEP/2002
I-24	52.222-20	WALSH-HEALEY PUBLIC CONTRACTS ACT	DEC/1996
I-25	52.222-21	PROHIBITION OF SEGREGATED FACILITIES	FEB/1999
I-26	52.222-26	EQUAL OPPORTUNITY	APR/2002
I-27	52.222-35	AFFIRMATIVE ACTION FOR DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA	DEC/2001
I-28	52.222-36	AFFIRMATIVE ACTION FOR WORKERS WITH DISABILITIES	JUN/1998
I-29	52.222-37	EMPLOYMENT REPORTS ON SPECIAL DISABLED VETERANS, VETERANS OF THE VIETNAM ERA, AND OTHER ELIGIBLE VETERANS	DEC/2001
I-30	52.223-6	DRUG FREE WORKPLACE	MAY/2001
I-31	52.225-8	DUTY-FREE ENTRY	FEB/2000
I-32	52.225-13	RESTRICTIONS ON CERTAIN FOREIGN PURCHASES	JUL/2000
I-33	52.226-1	UTILIZATION OF INDIAN ORGANIZATIONS AND INDIAN-OWNED ECONOMIC ENTERPRISES	JUN/2000
I-34	52.227-2	NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT	AUG/1996
I-35	52.227-3	PATENT INDEMNITY	APR/1984
I-36	52.227-11	PATENT RIGHTS--RETENTION BY THE CONTRACTOR (SHORT FORM)	JUN/1997
I-37	52.228-7	INSURANCE--LIABILITY TO THIRD PERSONS	MAR/1996
I-38	52.229-4	FEDERAL, STATE, AND LOCAL TAXES (NONCOMPETITIVE CONTRACT)	JAN/1991
I-39	52.232-9	LIMITATION ON WITHHOLDING OF PAYMENTS	APR/1984
I-40	52.232-17	INTEREST	JUN/1996
I-41	52.232-20	LIMITATION OF COST	APR/1984
I-42	52.232-23	ASSIGNMENT OF CLAIMS	JAN/1986
I-43	52.232-25	PROMPT PAYMENT	FEB/2002
I-44	52.232-33	PAYMENT BY ELECTRONIC FUNDS TRANSFER--CENTRAL CONTRACTOR REGISTRATION	MAY/1999
I-45	52.233-1	DISPUTES	JUL/2002
I-46	52.233-3	PROTEST AFTER AWARD -- (ALTERNATE I, dated JUN 1985)	AUG/1996
I-47	52.242-1	NOTICE OF INTENT TO DISALLOW COSTS	APR/1984
I-48	52.242-3	PENALTIES FOR UNALLOWABLE COSTS	MAY/2001



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I-49	52.242-4	CERTIFICATION OF INDIRECT COSTS	JAN/1997
I-50	52.242-13	BANKRUPTCY	JUL/1995
I-51	52.243-2	CHANGES--COST-REIMBURSEMENT (ALTERNATE V, dated April 1984))	AUG/1987
I-52	52.243-7	NOTIFICATION OF CHANGES	APR/1984
I-53	52.244-2	SUBCONTRACTS (ALT I--AUG 1998)	AUG/1998
I-54	52.244-5	COMPETITION IN SUBCONTRACTING	DEC/1996
I-55	52.245-5	GOVERNMENT PROPERTY (COST-REIMBURSEMENT, TIME-AND-MATERIAL, OR LABOR-HOUR CONTRACTS) --ALTERNATE I (JUL 1985) (91-DEV-44) (Army Policy Alert Bulletin #97-009)	JAN/1986
I-56	52.245-19	GOVERNMENT PROPERTY FURNISHED AS-IS	APR/1984
I-57	52.246-23	LIMITATION OF LIABILITY	FEB/1997
I-58	52.246-24	LIMITATION OF LIABILITY--HIGH-VALUE ITEMS	FEB/1997
I-59	52.247-1	COMMERCIAL BILL OF LADING NOTATIONS the notation set forth in paragraph (a) of the clause applies in this contract.` The agency name in line one of the notation shall read:US ARMY TANK-AUTOMOTIVE & ARMAMENTS COMMAND	APR/1984
I-60	52.247-67	SUBMISSION OF COMMERCIAL TRANSPORTATION BILLS TO THE GENERAL SERVICES ADMINISTRATION FOR AUDIT	JUN/1997
I-61	52.248-1	VALUE ENGINEERING	FEB/2000
I-62	52.249-6	TERMINATION (COST-REIMBURSEMENT)	SEP/1996
I-63	52.249-14	EXCUSABLE DELAYS	APR/1984
I-64	52.253-1	COMPUTER GENERATED FORMS	JAN/1991
I-65	252.203-7001	PROHIBITION ON PERSONS CONVICTED OF FRAUD OR OTHER DEFENSE CONTRACT-RELATED FELONIES	MAR/1999
I-66	252.204-7003	CONTROL OF GOVERNMENT PERSONNEL WORK PRODUCT	APR/1992
I-67	252.209-7000	ACQUISITION FROM SUBCONTRACTORS SUBJECT TO ON-SITE INSPECTION UNDER THE INTERMEDIATE-RANGE NUCLEAR FORCES (INF) TREATY	NOV/1995
I-68	252.209-7004	SUBCONTRACTING WITH FIRMS THAT ARE OWNED OR CONTROLLED BY THE GOVERNMENT OF A TERRORIST COUNTRY per DoD interim rule, Federal Register 27 Mar 98	MAR/1998
I-69	252.211-7005	SUBSTITUTIONS FOR MILITARY OR FEDERAL SPECIFICATIONS AND STANDARDS	FEB/2003
I-70	252.215-7000	PRICING ADJUSTMENTS	DEC/1991
I-71	252.215-7002	COST ESTIMATING SYSTEM REQUIREMENTS	OCT/1998
I-72	252.219-7003	SMALL, SMALL DISADVANTAGED AND WOMEN-OWNED SMALL BUSINESS SUBCONTRACTING PLAN (DOD CONTRACTS)	APR/1996
I-73	252.225-7012	PREFERENCE FOR CERTAIN DOMESTIC COMMODITIES	FEB/2003
I-74	252.225-7014	PREFERENCE FOR DOMESTIC SPECIALTY METALS (ALT 1)	MAR/1998
I-75	252.225-7016	RESTRICTION ON ACQUISITION OF BALL AND ROLLER BEARINGS	DEC/2000
I-76	252.225-7025	RESTRICTION ON ACQUISITION OF FORGINGS	JUN/1997
I-77	252.225-7026	REPORTING OF CONTRACT PERFORMANCE OUTSIDE THE UNITED STATES	JUN/2000
I-78	252.225-7031	SECONDARY ARAB BOYCOTT OF ISRAEL	JUN/1992
I-79	252.227-7013	RIGHTS IN TECHNICAL DATA --NONCOMMERCIAL ITEMS	NOV/1995
I-80	252.227-7016	RIGHTS IN BID OR PROPOSAL INFORMATION	JUN/1995
I-81	252.227-7017	IDENTIFICATION AND ASSERTION OF USE, RELEASE, OR DISCLOSURE RESTRICTIONS	JUN/1995
I-82	252.227-7030	TECHNICAL DATA--WITHHOLDING OF PAYMENT	MAR/2000
I-83	252.227-7034	PATENTS--SUBCONTRACTS	APR/1984
I-84	252.227-7036	DECLARATION OF TECHNICAL DATA CONFORMITY	JAN/1997
I-85	252.227-7037	VALIDATION OF RESTRICTIVE MARKINGS ON TECHNICAL DATA	SEP/1999
I-86	252.244-7000	SUBCONTRACTS FOR COMMERCIAL ITEMS AND COMMERCIAL COMPONENTS (DoD CONTRACTS)	MAR/2000
I-87	52.215-21	REQUIREMENTS FOR COST OR PRICING DATA OR INFORMATION OTHER THAN COST OR PRICING DATA--MODIFICATIONS ````(ALTERNATE III (OCT 1997))	OCT/1997

(a) Exceptions from cost or pricing data.

(1) In lieu of submitting cost or pricing data for modifications under this contract, for price adjustments expected to exceed the threshold set forth at FAR 15.403-4 on the date of the agreement on price or the date of the award, whichever is later, the Contractor may submit a written request for exception by submitting the information described in the following subparagraphs. The Contracting Officer may require additional supporting information, but only to the extent necessary to determine whether an exception should be granted, and whether the price is fair and reasonable--

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(i) Identification of the law or regulation establishing the price offered. If the price is controlled under law by periodic rulings, reviews, or similar actions of a governmental body, attach a copy of the controlling document, unless it was previously submitted to the contracting office.

(ii) Information on modifications of contracts or subcontracts for commercial items.

(A) If--

- (1) the original contract or subcontract was granted an exception from cost or pricing data requirements because the price agreed upon was based on adequate price competition, or prices set by law or regulation, or was a contract or subcontract for the acquisition of a commercial item, and
- (2) the modification (to the contract or subcontract) is not exempted based on one of these exceptions, then the Contractor may provide information to establish that the modification would not change the contract or subcontract from a contract or subcontract for the acquisition of a commercial item to a contract or subcontract for the acquisition of an item other than a commercial item.

(B) For a commercial item exception, the Contractor shall provide, at a minimum, information on prices at which the same item or similar items have previously been sold that is adequate for evaluating the reasonableness of the price of the modification. Such information may include--

- (1) For catalog items, a copy of or identification of the catalog and its date, or the appropriate pages for the offered items, or a statement that the catalog is on file in the buying office to which the proposal is being submitted. Provide a copy or describe current discount policies and price lists (published or unpublished), e.g., wholesale, original equipment manufacturer, or reseller. Also explain the basis of each offered price and its relationship to the established catalog price, including how the proposed price relates to the price or recent sales in quantities similar to the proposed quantities.
- (2) For market-priced items, the source and date or period of the market quotation or other basis for market price, the base amount, and applicable discounts. In addition, describe the nature of the market.
- (3) For items included on an active Federal Supply Service Multiple Award Schedule contract, proof that an exception has been granted for the schedule item.
- (4) The Contractor grants the Contracting Officer or an authorized representative the right to examine, at any time before award, books, records, documents, or other directly pertinent records to verify any request for an exception under this clause, and the reasonableness of price. For items priced using catalog or market prices, or law or regulation, access does not extend to cost or profit information or other data relevant solely to the Contractor's determination of the prices to be offered in the catalog or marketplace.

(b) Requirements for cost or pricing data. If the Contractor is not granted an exception from the requirement to submit cost or pricing data, the following applies:

(1) The Contractor shall submit cost or pricing data and supporting attachments in accordance with Table 15-2 of FAR 15.408.

(2) As soon as practicable after agreement on price, but before contract award (except for unpriced actions), the Contractor shall submit a Certificate of Current Cost or Pricing Data, as prescribed by FAR 15.406-2.

(c) Submit the cost portion of the proposal via the following electronic media: MICROSOFT EXCEL WITH WORKING FORMULA IN THE SPREADSHEET(S).

[End of Clause]

I-88 52.222-2 PAYMENT FOR OVERTIME PREMIUMS JUL/1990

(a) The use of overtime is authorized under this contract if the overtime premium cost does not exceed -1- or the overtime premium is paid for work--

(1) Necessary to cope with emergencies such as those resulting from accidents, natural disasters, breakdown of production equipment, or occasional production bottlenecks of a sporadic nature;

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- (2) By indirect-labor employees such as those performing duties in connection with administration, protection, transportation, maintenance, standby plant protection, operation of utilities, or accounting;
- (3) To perform tests, industrial processes, laboratory procedures, loading or unloading of transportation conveyances, and operations in flight or afloat that are continuous in nature and cannot reasonably be interrupted or completed otherwise; or
- (4) That will result in lower overall costs to the Government.
- (b) Any request for estimated overtime premiums that exceeds the amount specified above shall include all estimated overtime for contract completion and shall--
- (1) Identify the work unit; e.g., department or section in which the requested overtime will be used, together with present workload, staffing, and other data of the affected unit sufficient to permit the Contracting Officer to evaluate the necessity for the overtime;
- (2) Demonstrate the effect that denial of the request will have on the contract delivery or performance schedule;
- (3) Identify the extent to which approval of overtime would affect the performance or payments in connection with other Government contracts, together with identification of each affected contract; and
- (4) Provide reasons why the required work cannot be performed by using multishift operations or by employing additional personnel.
- (End of clause)

I-89	52.211-1	AVAILABILITY OF SPECIFICATIONS LISTED IN THE GSA INDEX OF FEDERAL SPECIFICATIONS, STANDARDS AND COMMERCIAL ITEM DESCRIPTIONS, FPMR PART 101-29	AUG/1998
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- (a) The GSA Index of Federal Specifications, Standards and Commercial Item Descriptions, FPMR Part 101-29, and copies of specifications, standards, and commercial item descriptions cited in this solicitation may be obtained for a fee by submitting a request to--
- GSA Federal Supply Service  
Specifications Section, Suite 8100  
470 East L'Enfant Plaza SW  
Washington, DC 20407
- Telephone (202) 619-8925
- Facsimile (202) 619-8978
- (b) If the General Services Administration, Department of Agriculture, or Department of Veterans Affairs issued this solicitation, a single copy of specifications, standards, and commercial item descriptions cited in this solicitation may be obtained free of charge by submitting a request to the addressee in paragraph (a) of this provision. Additional copies will be issued for a fee.
- [End of Clause]

I-90	52.223-11	OZONE-DEPLETING SUBSTANCES	MAY/2001
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- (a) Definition. Ozone-depleting substance, as used in this clause, means any substance the Environmental Protection Agency designates in 40 CFR part 82 as--
- (1) Class I, including, but not limited to, chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform; or
- (2) Class II, including but not limited to, hydrochlorofluorocarbons.
- (b) The Contractor shall label products which contain or are manufactured with ozone-depleting substances in the manner and to the extent required by 42 U.S.C. 7671j(b), (c), and (d) and 40 CFR Part 82, Subpart E, as follows:
- WARNING: Contains (or manufactured with, if applicable) \_\_\_\_\_ \* \_\_\_\_\_, a substance(s) which harm(s) public health and environment by destroying ozone in the upper atmosphere.
- \*The Contractor shall insert the name of the substance(s).
- [End of Clause]

I-91	52.244-6	SUBCONTRACTS FOR COMMERCIAL ITEMS	MAY/2002
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(a) Definitions. As used in this clause--

(1) "Commercial item," as used in this clause, has the meaning contained in the clause at 52.202-1, Definitions.

(2) "Subcontract," as used in this clause, includes a transfer of commercial items between divisions, subsidiaries, or affiliates of the Contractor or subcontractor at any tier.

(b) To the maximum extent practicable, the Contractor shall incorporate, and require its subcontractors at all tiers to incorporate, commercial items or nondevelopmental items as components of items to be supplied under this contract.

(c)

(1) The contractor shall insert the following clauses in subcontracts for commercial items:

(i) 52.219-8, Utilization of Small Business Concerns (OCT 2000)(15U.S.C. 637(d)(2) and (3)), in all subcontracts that offer subcontracting opportunities. If the subcontract (except subcontracts to small business concerns) exceeds \$500,000 (\$1,000,000 for construction of any public facility), the subcontractor must include 52.219-8 in lower tier subcontracts that offer subcontracting opportunities.

(ii) 52.222-26, Equal Opportunity (APR 2002)(E.O. 11246);

(iii) 52.222-35, Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (Dec 2001) (38 U.S.C. 4212(a));

(iv) 52.222-36, Affirmative Action for Workers with Disabilities (JUN 1998)(29 U.S.C. 793);

(v) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (JUN 2000)(46 U.S.C. 1241) (flow down not required for subcontracts awarded beginning May 1, 1996).

(2) While not required, the Contractor may flow down to subcontracts for commercial items a minimum number of additional clauses necessary to satisfy its contractual obligations.

(d) The Contractor shall include the terms of this clause, including this paragraph (d), in subcontracts awarded under this contract.

[End of Clause]

I-92            52.252-6            AUTHORIZED DEVIATIONS IN CLAUSES            APR/1984

(a) The use in this solicitation or contract of any Federal Acquisition Regulation (48 CFR Chapter 1) clause with an authorized deviation is indicated by the addition of (DEVIATION) after the date of the clause.

(b) The use in this solicitation or contract of any DoD FAR Supplement (DFARS) (48 CFR 2) clause with an authorized deviation is indicated by the addition of (DEVIATION) after the name of the regulation.

[End of Clause]

I-93            252.204-7004            REQUIRED CENTRAL CONTRACTOR REGISTRATION            NOV/2001

(a) Definitions. As used in this clause--

(1) Central Contractor Registration (CCR) database means the primary DoD repository for contractor information required for the conduct of business with DoD.

(2) Data Universal Numbering System (DUNS) number means the 9-digit number assigned by Dun and Bradstreet Information Services to identify unique business entities.

(3) Data Universal Numbering System +4 (DUNS+4) number means the DUNS number assigned by Dun and Bradstreet plus a 4-digit suffix that may be assigned by a parent (controlling) business concern. This 4-digit suffix may be assigned at the discretion of the parent business concern for such purposes as identifying subunits or affiliates of the parent business concern.

(4) Registered in the CCR database means that all mandatory information, including the DUNS number or the DUNS+4 number, if

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applicable, and the corresponding Commercial and Government Entity (CAGE) code, is in the CCR database; the DUNS number and the CAGE code have been validated; and all edits have been successfully completed.

(b)

(1) By submission of an offer, the offeror acknowledges the requirement that a prospective awardee must be registered in the CCR database prior to award, during performance, and through final payment of any contract resulting from this solicitation, except for awards to foreign vendors for work to be performed outside the United States.

(2) The offeror shall provide its DUNS or, if applicable, its DUNS+4 number with its offer, which will be used by the Contracting Officer to verify that the offeror is registered in the CCR database.

(3) Lack of registration in the CCR database will make an offeror ineligible for award.

(4) DoD has established a goal of registering an applicant in the CCR database within 48 hours after receipt of a complete and accurate application via the Internet. However, registration of an applicant submitting an application through a method other than the Internet may take up to 30 days. Therefore, offerors that are not registered should consider applying for registration immediately upon receipt of this solicitation.

(c) The Contractor is responsible for the accuracy and completeness of the data within the CCR, and for any liability resulting from the Government's reliance on inaccurate or incomplete data. To remain registered in the CCR database after the initial registration, the Contractor is required to confirm on an annual basis that its information in the CCR database is accurate and complete.

(d) Offerors and contractors may obtain information on registration and annual confirmation requirements by calling 1-888-227-2423, or via the Internet at <http://www.ccr.gov>.

[End of Clause]

I-94 252.225-7015 PREFERENCE FOR DOMESTIC HAND OR MEASURING TOOLS DEC/1991  
The Contractor agrees to deliver under this contract only hand or measuring tools produced in the United States or its possessions.  
(End of clause)

I-95 252.247-7023 TRANSPORTATION OF SUPPLIES BY SEA MAY/2002

(a) Definitions. As used in this clause--

(1) Components means articles, materials, and supplies incorporated directly into end products at any level of manufacture, fabrication, or assembly by the Contractor or any subcontractor.

(2) Department of Defense (DoD) means the Army, Navy, Air Force, Marine Corps, and defense agencies.

(3) Foreign flag vessel means any vessel that is not a U.S.-flag vessel.

(4) Ocean transportation means any transportation aboard a ship, vessel, boat, barge, or ferry through international waters.

(5) Subcontractor means a supplier, materialman, distributor, or vendor at any level below the prime contractor whose contractual obligation to perform results from, or is conditioned upon, award of the prime contract and who is performing any part of the work or other requirement of the prime contract. However, effective May 1, 1996, the term does not include a supplier, materialman, distributor, or vendor of commercial items or commercial components.

(6) Supplies means all property, except land and interests in land, that is clearly identifiable for eventual use by or owned by the DoD at the time of transportation by sea.

(i) An item is clearly identifiable for eventual use by the DoD if, for example, the contract documentation contains a reference to a DoD contract number or a military destination.

(ii) Supplies includes (but is not limited to) public works; buildings and facilities; ships; floating equipment and vessels of every character, type, and description, with parts, subassemblies, accessories, and equipment; machine tools; material; equipment; stores of all kinds; end items; construction materials; and components of the foregoing.

(7) U.S.-flag vessel means a vessel of the United States or belonging to the United States, including any vessel registered or

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having national status under the laws of the United States.

(b)

(1) The Contractor shall use U.S.-flag vessels when transporting any supplies by sea under this contract.

(2) A subcontractor transporting supplies by sea under this contract shall use U.S.-flag vessels if-

(i) This contract is a construction contract; or

(ii) The supplies being transported are-

(A) Noncommercial items; or

(B) Commercial items that-

(1) The Contractor is reselling or distributing to the Government without adding value (generally, the Contractor does not add value to items that it subcontracts for f.o.b. destination shipment);

(2) Are shipped in direct support of U.S. military contingency operations, exercises, or forces deployed in humanitarian or peacekeeping operations; or

(3) Are commissary or exchange cargoes transported outside of the Defense Transportation System in accordance with 10 U.S.C. 2643.

(c) The Contractor and its subcontractors may request that the Contracting Officer authorize shipment in foreign-flag vessels, or designate available U.S.-flag vessels, if the Contractor or a subcontractor believes that--

(1) U.S.-flag vessels are not available for timely shipment;

(2) The freight charges are inordinately excessive or unreasonable; or

(3) Freight charges are higher than charges to private persons for transportation of like goods.

(d) The Contractor must submit any request for use of other than U.S.-flag vessels in writing to the Contracting Officer at least 45 days prior to the sailing date necessary to meet its delivery schedules. The Contracting Officer will process requests submitted after such date(s) as expeditiously as possible, but the Contracting Officer's failure to grant approvals to meet the shipper's sailing date will not of itself constitute a compensable delay under this or any other clause of this contract. Requests shall contain at a minimum--

(1) Type, weight, and cube of cargo;

(2) Required shipping date;

(3) Special handling and discharge requirements;

(4) Loading and discharge points;

(5) Name of shipper and consignee;

(6) Prime contract number; and

(7) A documented description of efforts made to secure U.S.-flag vessels, including points of contact (with names and telephone numbers) with at least two U.S.-flag carriers contacted. Copies of telephone notes, telegraphic and facsimile message or letters will be sufficient for this purpose.

(e) The Contractor shall, within 30 days after each shipment covered by this clause, provide the Contracting Officer and the Division of National Cargo, Office of Market Development, Maritime Administration, U.S. Department of Transportation, Washington, DC 20590, one copy of the rated on board vessel operating carrier's ocean bill of lading, which shall contain the following information--

(1) Prime contract number;

(2) Name of vessel;

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- (3) Vessel flag of registry;
- (4) Date of loading;
- (5) Port of loading;
- (6) Port of final discharge;
- (7) Description of commodity;
- (8) Gross weight in pounds and cubic feet if available;
- (9) Total ocean freight in U.S. dollars; and
- (10) Name of the steamship company.

(f) The Contractor shall provide with its final invoice under this contract a representation that to the best of its knowledge and belief--

- (1) No ocean transportation was used in the performance of this contract;
- (2) Ocean transportation was used and only U.S.-flag vessels were used for all ocean shipments under the contract;

(3) Ocean transportation was used, and the Contractor had the written consent of the Contracting Officer for all non-U.S.-flag ocean transportation; or

(4) Ocean transportation was used and some or all of the shipments were made on non-U.S.-flag vessels without the written consent of the Contracting Officer. The Contractor shall describe these shipments in the following format:

ITEM DESCRIPTION	CONTRACT LINE ITEMS	QUANTITY	TOTAL
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(g) If the final invoice does not include the required representation, the Government will reject and return it to the Contractor as an improper invoice for the purposes of the Prompt Payment clause of this contract. In the event there has been unauthorized use of non-U.S.-flag vessels in the performance of this contract, the Contracting Officer is entitled to equitably adjust the contract, based on the unauthorized use.

(h) In the award of subcontracts for the types of supplies described in paragraph (b)(2) of this clause, the Contractor shall flow down the requirements of this clause as follows:

(1) The Contractor shall insert the substance of this clause, including this paragraph (h) in all subcontracts that exceed the simplified acquisition threshold in Part 2 of the Federal Acquisition Regulation.

(2) The Contractor shall insert the substance of paragraphs (a) through (e) of this clause, and this paragraph (h), in subcontracts that are at or below the simplified acquisition threshold in Part 2 of the Federal Acquisition Regulation.

[End of Clause]

I-96	52.204-4009 (TACOM)	MANDATORY USE OF CONTRACTOR TO GOVERNMENT ELECTRONIC COMMUNICATION	JUN/1999
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(a) All references in the contract to the submission of written documentation shall mean electronic submission. All electronic submissions shall be in the formats and media described in the "Electronic Quotations/Offers/Bids Required in Response to this Request for Quotations/Proposals/Bids" clause elsewhere in this document. (See Section K for commercial acquisitions, Section L for RFPs, and Section I for RFQs.)

(b) This shall include all written unclassified communications between the Government and the Contractor except contract awards and contract modifications which shall be posted on the internet. Return receipt shall be used if a commercial application is available. Classified information shall be handled in full accordance with the appropriate security requirements.

(c) In order to be contractually binding, all Government communications requiring a Contracting Officer signature must be sent from the Contracting Officer's e-mail address. The Contractor shall designate the personnel with signature authority who can contractually bind the contractor. All binding contractor communication shall be sent from this contractor e-mail address(es).

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(d) Upon award, the Contractor shall provide the Contracting Officer with a list of e-mail addresses for all administrative and technical personnel assigned to this contract.

(e) Unless exempted by the Procuring Contracting Officer in writing, all unclassified written communication after contract award shall be transmitted electronically.

[End of Clause]



SECTION J - LIST OF ATTACHMENTS

<u>List of</u> <u>Addenda</u>	<u>Title</u>	<u>Date</u>	<u>Number</u> <u>of Pages</u>	<u>Transmitted By</u>
Attachment 001	SYSTEM PERFORMANCE SPECIFICAITON	14-MAR-2003	015	
Attachment 002	RIFTS TDM REQUIRMENTS LIST		003	
Attachment 003	CONCEPTUAL DESIGN DRAWINGS		001	
Attachment 004	CONTRACT DATA REQUIREMENTS LIST		003	

Attachment 001  
14 March 2003

SYSTEM PERFORMANCE SPECIFICATION  
Rapidly INstalled FLUID Transfer System (RIFTS)

This specification is approved for use by the U.S. Army Tank-automotive and Armaments Command and the Department of the Army and it is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1. Scope. This system performance specification establishes the characteristics and performance requirements for the Rapidly Installed Fluid Transfer System (RIFTS). The RIFTS is a rapidly emplaced and retrieved fluid transfer system that has the capability of distributing 850,000 gallons of fuel or water per day. One RIFTS system consists of 50 miles of conduit with deployment and retrieval devices, adequate number of pumping stations for the mission terrain, one command and control module with leak detection capability, and one computer based planning aid. The RIFTS is an ISO-compatible system that has the ability to be loaded and transported using the HEMTT-LHS truck, PLS truck, and PLS trailer as the prime mover. The system is designed to traverse to different types of terrain that the employment vehicle is capable of. With the emplacement rate requirement of 20 miles per day (mpd) and retrieval rate requirement of 10 mpd, the RIFTS has the flexibility to be tailored for any location, terrain or transport distance on the battlefield. RIFTS allows distribution planners to move the system as the battlefield moves.

2. APPLICABLE DOCUMENTS

2.1. General. The documents listed in this section are specified in sections 3 of this specification. This section does not include documents cited in other sections of the specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 of this specification, whether or not they are listed.

2.2. Government documents.

2.2.1. Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2)

SPECIFICATIONS

FEDERAL

A-A-52624- Antifreeze, Multi-Engine Type  
A-A-52557- Fuel Oil, Diesel; For Posts, Camps And Stations

DEPARTMENT OF DEFENSE

MIL-PRF-2104-Lubricating Oil, Internal Combustion Engine, Combat/Tactical Service.  
MIL-PRF-2105-Lubricating Oil, Gear, Multipurpose (Metric).  
MIL-DTL-5624-Turbine Fuel, Aviation, Grades JP-4, JP-5, And JP-5/JP-8 ST.  
MIL-PRF-10924-Grease, Automotive and Artillery.  
MIL-PRF-21260-Lubricating Oil, Internal Combustion Engine, Preservative Break-In.  
MIL-F-46162-Fuel, Diesel, Referee Grade.  
MIL-PRF-46167-Lubricating Oil, Internal Combustion Engine, Arctic.  
MIL-C-53039-Coating, Aliphatic Polyurethane, Single Component, Chemical Agent Resistant.  
MIL-DTL-83133-Turbine Fuels, Aviation, Kerosene Types, NATO F-34 (JP-8), NATO F-35, and JP-8+100.

#### STANDARDS

##### FEDERAL

FED-STD-595-Colors Used in Government Procurement.

##### DEPARTMENT OF DEFENSE

MIL-STD-1366-Transportability Criteria.

MIL-STD-209-Lifting and Tiedown Provisions.

MIL-STD-461-Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment.

MIL-STD-464-Electromagnetic Environmental Effects Requirements for Systems.

MIL-STD-810-Environmental Engineering Considerations and Laboratory Tests.

#### HANDBOOKS

MIL-HDBK-1791-Designing for Internal Aerial Delivery in Fixed Wing Aircraft.

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from Document Automation and Production Service, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2.2. Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

#### NORTH ATLANTIC TREATY ORGANIZATION (NATO)

STANAG 1135-Interchangeability of Fuels, Lubricants and Associated Products Used by the Armed Forces of the North Atlantic Treaty Nations.

STANAG 2413- Demountable Load Carrying Platforms (DLCP)

(Copies of North Atlantic Treaty Organization (NATO) are available from NATO Blvd Leopold III, 1110 Brussels, Belgium.)

#### PURCHASE DESCRIPTIONS

ATPD 2206-Batteries, Storage: Lead-Acid, Maintenance Free.

(Copies are available from the US Army Tank-automotive and Armaments Command, AMSTA-TR-D/210, Warren, MI 48397-5000.)

#### US ARMY PAMPHLETS

AR 70-38 - Research, Development, Test and Evaluation of Materiel for Extreme Climatic Conditions.

AR 70-75 - Survivability of Army Personnel and Materiel

AR 750-1 - Army Material Maintenance Policy and Retail Maintenance Operations.

DA Pam 611-21-Military Occupational Classification and Structure.

DA Pam 738-750-Functional Users Manual for the Army Maintenance Management System (TAMMS).

DA Pam 750-35-Guide for Motor Pool Operations.

(Copies are available from the US Army Tank-automotive and Armaments Command, AMSTA-TR-D/210, Warren, MI 48397-5000. Some are also available on-line at <http://www.usapa.army.mil>.)

2.3. Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

#### AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D610 - Standard Test Method for Evaluating Degree of Rusting on Painted Steel Surfaces SSPC-VIS-2

ASTM D975 - Standard Specification for Diesel Fuel Oils (DoD Adopted).

ASTM D1171 - Standard Test Method for Rubber Deterioration - Surface Ozone Cracking Outdoors or Chamber (Triangular Specimens)

ASTM D1655 - Standard Specification for Aviation Turbine Fuels (DoD Adopted).

(Copies are available from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

GERMAN INDUSTRIAL STANDARDS

DIN 30722 Pay-off Dump Trucks up to 32T (flatrack critical dimensions)

(Copies are available from Global Engineering Documents, An IHS GROUP Company, 15 Inverness Way East, Englewood, Colorado 80112.)

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

ISO 668 Series 1 Freight Containers - Classification, Dimensions and Ratings (DoD Adopted)

ISO 1496-1 Series 1 Freight Containers - Specification and Testing - Part 1: General Cargo Containers for General Purposes

Amendment 1: 1AAA and 1BBB Containers (DoD Adopted)

ISO 1496-5 Series 1 Freight Containers - Specification and Testing - Pt 5: Platform and Platform-Based Containers

(Application for copies should be addresses to American National Standards Institute, 11 West 42nd Street, New York, NY 10036.)

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA-12 - Standard on Carbon Dioxide Extinguishing Systems

(Copies are available from the National Fire Protection Association, 1 Batterymarch Park, PO Box 9101, Quincy, MA 02269-9101)

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

SAE ARP 1967 - Containers, Shipping and Storage, Reusable (DoD Adopted).

(Copies are available from The Society of Automotive Engineers, Department 105, 400 Commonwealth Drive, Warrendale, PA 15096.)

2.4. Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1. System Description. As written herein, minimum acceptable performance threshold requirements are indicated with the word shall throughout the text. As applicable, objective capabilities that are not mandatory are indicated with the words should, may, desired, or desirable. The RIFTS is used for the transport of large quantities of fuel or potable water in the theater and corps area. One complete RIFTS System consists of 50 miles of conduit and all of the components, such as pumping stations, pressure reducing stations, clean out devices and any other unique components necessary to deploy, operate, and recover the system. To support any size force over both short and long distances, all components of RIFTS, except for the pumping stations, shall be packaged and containerized as 5-mile sets for deployment and installation purposes. For this baseline system contract, contractor shall provide all the components necessary to support a minimum of one 5-mile set.

3.1.1. Mission. The mission of the RIFTS system is to be a rapidly installed, rapidly recovered, fluid transfer system that is capable of deployment across all types of terrain in support of petroleum or water distribution from the port of entry and forward into the theater. It shall be managed with the necessary security, economy of force operations, and within capabilities.

3.1.2. Phases of Operation. There are three major phases of operation for the RIFTS System: employment (see 4.1), fluid transfer, and system retrieval.

3.2. Materials and workmanship. The materials, processing and parts used in the manufacture of the system components shall be as identified and shall meet all of the operational and environmental requirements specified in this performance specification. Particular attention shall be given to the selection of materials, processes, and parts to facilitate interchangeability, reliability, stocking, and replacement in service. The components incorporated into the system shall be newly fabricated from recovered materials to the maximum extent practicable, provided the components meet all other requirements of this specification. The materials shall be of sufficient durability to meet all the requirements as specified herein. No material shall have an adverse effect on the health of personnel when used for its intended purposes. Toxic chemicals, hazardous substances, or ozone depleting chemicals (ODC) shall not be used. When utilized, gaskets shall not be of a cork or cork/rubber combination material.

3.2.1. Workmanship. Product workmanship and finishes shall be in accordance with the best practices used for manufacturing military equipment. Finished items and parts shall not exhibit faulty material and processing such as: discoloration, bubbles, seams, laps, lamination, cracks, visible steps, sharp edges, nicks, scratches, burrs, foreign matter entrapment, deformations, and missing features that could affect usability, serviceability, reliability, operation, safety, or performance requirements.

3.2.2. Interchangeability. All parts that have the same manufacturers or drawing part number shall be fully functional and dimensionally interchangeable and replaceable with each other with respect to installation and performance requirements.

3.2.3. Metals. All metal parts, other than electrical current-carrying parts shall be corrosion-resistant metal, or shall be plated or coated to resist corrosion. Dissimilar metals shall not be used in intimate contact except to complete an electrical circuit or protect against galvanic corrosion.

3.2.4. Non-metals. Non-metals such as plastics, fabric, coatings and protective finishes shall be moisture and flame resistant and self-extinguishing if practical. Such materials shall not be adversely affected by environmental conditions (as specified in 3.3.4) encountered during storage, handling, transportation and operation.

3.2.5. Deterioration prevention and control. Materials shall be selected to meet all the operational and environmental requirements that are specified herein. The system components shall be fabricated from compatible materials that are inherently corrosion resistant or treated to provide against corrosion and deterioration during storage and operational conditions experienced. Conduit shall not be crimped or folded by any system components to prolong conduit life.

3.2.6. Protective finishes and coatings. Materials that are subject to deterioration when exposed to the environmental conditions specified herein shall be protected against any such deterioration. The method of protection shall in no way prevent compliance with other requirements of this document nor interfere with electrical continuity and grounding provisions. The use of any protective coatings that will crack, chip, scale, or erode with age, when exposed to environmental conditions as specified in 3.3.4 shall be avoided.

3.2.7. Corrosion Control Performance. The RIFTS shall operate for the minimum service life (see 3.3.3.7), which will include varying or extended periods in corrosive environments involving one or more of the following: high humidity, salt spray, road de-icing agents, gravel impingement, atmospheric contamination and temperature extremes (-40 to +140 F degrees). Only normal washing, scheduled maintenance (exclusive of paint touch up) and repair of accidentally damaged areas (not a result of intended use, deficiency in design, materials, manufacturing or normal wear), shall be necessary to keep the corrosion prevention in effect. During the specified service life, surface corrosion shall be a maximum of 0.1% (ASTM D610, Rust Grade 8) on inside or outside surface of any component. In no case shall any area exhibit Stage 2 or greater corrosion (as defined in the US Army Corrosion Rating System) during the specified service life. There shall be no affect on form, fit or function of any component due to corrosion

3.2.8. Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs. Used, rebuilt, or remanufactured components shall not be incorporated into the RIFTS.

### 3.3. Operating and design requirements.

3.3.1. Major Components. All major mechanical components and electrical systems shall be modular in design for fast installation and ease of operation. Design considerations shall be made to minimize the component weight and the amount of logistic footprint that requires to store and transport the system. It is desired that electronical serviceable components be hot swappable.

3.3.1.1. Conduit. For this acquisition the RIFTS shall include a minimum of 5 miles of collapsible conduit, with a desired of 10 miles. Each continuous segment of the conduit shall be the same length. The diameter of the conduit shall be sized to provide the system fluid throughput. The proposed conduit for the RIFTS shall be of petroleum-resistant compound and water compatible compound, see 3.3.4 for fuel compatibility. The conduit shall be ultraviolet stable, ozone resistant, and abrasion resistance.

3.3.1.1.1. Pressure. The proposed conduit shall have a minimum burst to working pressure ratio of 3 to 1. The minimum working pressure shall be no less than 350 pounds per square inch (psi). When subjected to working pressure, the length of conduit shall not change more than 2%. The proposed conduit shall not rupture when subjected to a hydrostatic test at the burst pressure. There shall be no slippage or pullout of the coupling from the conduit at the burst pressure.

3.3.1.1.2. Coupling. The couplings, when used to connect conduit segments, shall provide working and burst pressures equal to or greater than the conduit.

3.3.1.2. Emplacement and Retrieval Device (ERD). The ERD(s) shall be a transportable, powered, motor-driven device capable of transporting, storing, employing, and retrieving the conduit when properly positioned and attached to an employment vehicle (see 3.3.3.5). The ERD shall be capable of laying the conduit a minimum of 8 feet from the edge of a road without the employment vehicle

having to leave the road surface. This shall be accomplished without operators having to manually move the conduit. The ERD shall be capable of employing and retrieving the conduit over any terrain that the employment vehicle is capable of traversing. The ERD(s) shall not introduce forces or stresses on the conduit, couplings, or other components of the RIFTS that exceed the performance capability of that component.

3.3.1.2.1. Employment and retrieval. The ERD shall have the capability to employ and retrieve the conduit, control unit speed, brake, and lock (mechanically prevent forward or reverse movement). When properly positioned and attached on the specified employment vehicles, the ERD shall have the capability to employ the conduit at a speed that can meet the system employment rate (see 3.3.3.1). The ERD shall also be capable of retrieving the conduit at a speed that can meet the system retrieval rate (see 3.3.3.1). The required personnel allowed are as specified in 3.3.3.4. In addition, the ERD shall have the capability to manually employ the conduit. During manual employment, the ERD shall have the capability to disengage the power source; employ and stop the conduit; control unit (employment) speed, brake, stop, and lock the ERD when the power source fails. The ERD shall not be required to or used to retrieve the conduit manually when the power source fails.

3.3.1.2.2. Power Source. The ERD shall include its own power source as part of the ERD module. If applicable, the power source shall be compatible with the fuels specified in paragraph 3.4.2. JP8 shall be the primary operating fuel. The ERD shall be capable of meeting all of the applicable performance criteria specified in this specification while operating on JP8.

3.3.1.2.3. Conduit Storage. The ERD(s) shall store the conduit without twisting, kinking, crimping or damaging the conduit or couplings. A means shall be provided to secure both the first and the last conduit section coupling during storage and transport. A minimum of one mile of conduit shall be stored on each ERD, with the ERD(s) sized to accommodate the maximum amount of conduit possible within the safe operating and transportation limits required herein. Same amount of conduit shall be able to store back to the ERD for retrieval. Sufficient space shall also be allotted to allow longer conduit length (no more than 250 feet) or extra volume due to conduit repairs (no more than 2 repairs). Each ERD shall store the same amount of conduit.

3.3.1.2.4. Control Panel. A control panel shall provide the operator with the capability to perform all operations necessary to emplace and recover the conduit. This shall include as a minimum the ability to control all directional, speed, braking, and other operations of the ERD. The control panel shall contain a dead man switch to stop the ERD from operation in case of emergency. The control panel shall be weather proofed and shall allow the operator to operate the ERD during both daylight and darkness (see 3.5.6.2). If a handheld control panel is used, it shall be wireless to reduce safety hazard during operation. In the case of a wireless control panel failure, an alternative method shall be provided for the continual operation of the ERD.

3.3.1.2.5. Communication. Wireless two-way communication (i.e. wireless headphone and microphones) shall be provided between the driver and all operators to maintain clear and constant communication during employment and retrieval processes.

3.3.1.2.6. Configuration. The configuration of each ERD shall be as specified in 3.3.3.6. The configuration of the ERD assemblies shall be such that the use of any external material handling equipment (MHE) for loading and unloading onto and off of the emplacement vehicle during the entire conduit emplacement and retrieval processes is not required.

3.3.1.3. Automated Pumping Stations (APS). For this acquisition, RIFTS shall include adequate pumping stations to transfer fluid across the length of conduit being provided. The system shall be designed for the worst case scenario of the terrain profile (Figure 1). No more than four APSs shall be required to transfer fuel through the required 5 miles of conduit; no more than seven APSs shall be allowed for the desired 10 miles of conduit. Each APS shall include all the equipment that is necessary to transfer and evacuate fuel through the conduit. Provisions shall be made to protect the pumping station from damage due to dirt or debris in the distribution system.

3.3.1.3.1. Pump Assembly. Each APS shall consist of two identical pump assemblies. The pump assemblies shall be configured as primary and secondary. Redundancy in the pumping station shall allow operation of one pump assembly while the other is experiencing failure or undergoing scheduled and unscheduled maintenance. Only one pump assembly shall pump fluid at any given time. Each pump assembly shall be sized to provide the system fluid transfer capability as required in 3.3.3.2 and have a compatible working pressure as the conduit. The pump speed shall be variable and controllable by the APS control system (see 3.3.1.3.5) in order to compensate for minor variations in inlet and outlet conditions. The pump assembly shall be capable of pumping non-potable water or the specified fuels (see 3.4.2). For design purpose, pump assembly shall be optimized for pumping the specified fuels with no degradation in performance. The materials and components of the pump assembly shall be compatible with non-potable water and the specified fuels. The first APS in the system shall be primed by the fluid storage source.

3.3.1.3.2. Pump Assembly Switching. Pump assembly switching shall be accomplished during scheduled and unscheduled maintenance or pump assembly failure. Pump assembly switching shall be accomplished via a remote command from the Command and Control Module (C2M) (see 3.3.1.4) or via the APS local user interface (see 3.3.1.3.6).

3.3.1.3.3. Starting System. The APS shall include a battery operated starting system to start the primary APS power source. The APS shall include a charging system to maintain the battery charged while the APS is in operation. The starting system shall be 24V and the batteries shall be as specified in 3.3.2.6.

3.3.1.3.4. Measurements and Instrumentation. Each APS shall be equipped with instrumentation that will measure and report pump-operating conditions to the local user interface and the C2M. Data shall be used for status display and for leak detection analysis. Minimum parameters shall be measured include:

- Inlet and outlet pressure (accuracy 0.3%, repeatability 0.3%)
- Flow rate (mass flow, accuracy 0.25%, repeatability 0.25%)
- Engine and pump speed (rpm) (accuracy 5% full-scale)
- Temperature of pumping fluid (accuracy 4 oF)
- Typical engine status measurements coolant temperature (accuracy 4 oF) , oil pressure (accuracy 5% full scale), battery voltage (accuracy 5% full scale)
- Fuel tank level (accuracy 2% full-scale) (desired)
- Valve positions (valve state) (desired)
- Pressure drop across filter-strainer unit (accuracy 5% full-scale)
- Pig status (in launcher, in receiver)

All measurements shall be viewable by the APS operator on the local user interface and the C2M. All measurements shall be sent via the APS communication system to the C2M at a minimum sample rate of 1 sample/second where a sample consists of all instrumentation measurements.

3.3.1.3.5. Automated Control System. An automated control system shall be incorporated for each APS to allow continuous unattended operation. The control system shall provide real-time operational control of the APS, including regulation and control of the pump assemblies, signal conditioning and A/D conversion of the instrumentation, send and receive commands from the C2M and the local user interface, and safety and system protection. A separate power source shall be provided for the control system. If batteries are used, a method of recharging shall also be included. To minimize the number of APS components, the APS power source may be used for recharging but shall be isolated from the starter batteries. The control system shall be able to operate, without the APS power source in operation, for a period of at least 24 hours. The control system shall be able to operate continuously while the APS power source is operating. The control system shall be capable of sitting in storage without power for periods of up to one year without requiring a reload of the control system software before operation. The control system shall only require the user to switch on APS power in order to begin full operation.

3.3.1.3.5.1. Control System Hardware, Software, and Functions. The control system shall be an embedded type system with the programmable software residing in solid-state non-volatile memory. Industrial standard programming language shall be used. Adaptation of existing industrial Commercial-Off-the-Shelf (COTS) control system hardware and software is preferred as long as the hardware and software meet the requirements of this specification. The selection of the hardware shall be such that replacement parts are readily available. The control system hardware shall be easily accessible and replaceable at the circuit card/module level or higher, using standard hand tools. At a minimum, remote control operations in response to commands from the C2M or the local user interface shall include:

- Pump assembly power source start up/shut down
- Pump assembly engage/disengage (if applicable)
- Pump speed control
- Pump selection (Primary or backup pump assembly)
- Fill fuel tank (from the fuel distribution line if fuel is compatible)

The control system shall also sense and respond to fault conditions such as (but not limited to) low pump inlet pressure (see 3.3.1.3.5.2), high pump outlet pressure (see 3.3.1.3.5.2), APS fire (see 3.3.1.3.12), low fuel tank, and any other status indicators for the pump assembly power source. When a fault condition occurs, the control system shall report the fault to the C2M and the local user interface to allow personnel to quickly identify the nature of the fault. In the event that the control system power source is within one hour of running out of power, a warning message will be sent to the local user interface and to the C2M indicating the low power source condition. In the event that control system power is within 30 minutes of failure, the control system shall start the APS power source in order to recharge the control system power source. In the event that the control system is inoperable due to a drained power source, the APS power source shall be capable of being manually started, via the APS starter batteries, by personnel at the APS. In the event of complete control system failure and/or communication failure, provision for complete manual operation of the APS shall be made available. Manual operation shall allow personnel located at the APS to control and monitor all aspects of the APS.

3.3.1.3.5.2. Inlet and Outlet Pressure Fault Conditions. The control system shall not allow the inlet pressure of any APS to fall below the minimum inlet pressure required by the pumping assemblies to minimize the occurrence of cavitation. The control system shall not allow the outlet pressure of any APS to exceed the working pressure rating of the lowest rated component in the RIFTS. In the event that the control system cannot compensate for inlet pressure loss or outlet pressure rise within the operating range of the APS (pump shaft speed), the control system shall bring the pump assembly offline. The control system shall restart the pumping operation when the inlet or outlet pressure has returned to the acceptable level. Care shall be taken with the control system to avoid repeated cycling due to marginal inlet pressure and outlet pressure fluctuations.

3.3.1.3.6. Local User Interface. A graphical user interface shall be built into each APS.

The local user interface shall allow personnel located at the APS to operate the pumping station when communication with the C2M is interrupted or not available. The local user interface shall be able to take over control of pumping station operation from the C2M when personnel located at the APS request control. However, the C2M shall be able to regain control of the APS upon request. The local user interface shall include an emergency shut down button that will stop all of the local APS operation, including the APS power source, when actuated. The shut down button shall be clearly marked and readily visible.

The local user interface shall display all status and instrumentation produced by the APS instrumentation (see 3.3.1.3.4) in real-time. Derived parameters and/or status indicators are allowable as long as all vital information is readily available to local personnel at the APS. For example, a red light can be used to indicate a prime mover problem, but personnel should still be able to determine if it is due to overheating by reading an engine temperature gauge. All pumping station control commands from the C2M shall also be provided by the local user interface for the local APS. The local user interface shall be readable and operable in full daylight and in complete darkness. The interface shall be password protected and weatherproof for use in the environments as specified in 3.3.4. The user interface shall be intuitive and easy to understand with minimal training.

A touch screen video display can be used for the local user interface. The video display shall meet all temperature and environmental requirements for the APS, be readable in direct sunlight and complete darkness, and be operable by personnel wearing full weather gear (see 3.3.4). Analog gauges and switches are also permissible for the local user interface.

3.3.1.3.7. Communication. The APS shall include a communication system that shall serve as the data connection path between the APS and the C2M. The control system shall use the communication system to send data to and receive data from the C2M. The communication system, like the control system, shall use a power source that does not require the APS power source to be in operation. The communication system shall be able to fully operate without the APS power source in operation for a period of 24 hours. The communication system shall be able to operate continuously while the APS power source is operating. In the event that the communication system power source is within one hour of running out of power, a warning message shall be sent to the local user interface and to the C2M indicating the condition. In the event that communication system power source is within 30 minutes of failure, the control system shall start the APS power source in order to recharge communication system battery power. All equipment (i.e. antennas) shall be integrated into the APS framework. The APS control system shall have provisions for Ethernet and RS-232 or RS-422 data connections for use with the communication system. The communications system shall be 0.75 cubic foot of space or smaller. Design consideration shall be given for placement of this communication system within the control system cabinet and for placement of the satellite antenna on the exterior of the APS.

3.3.1.3.8. Strainer Assembly. Each APS shall be equipped with two reusable strainer assemblies capable of removing debris from the fuel flow larger than 0.025 inches in diameter. The strainer assemblies shall be configured such that one strainer assembly can be cleaned out safely while the other is still in service (during pump operation). The strainer assemblies shall be easily accessible to maintenance personnel for inspection and cleaning.

3.3.1.3.9. Secondary Containment. The APS shall be equipped with a secondary containment sump designed to capture fluids or fuel. The sump shall have at least sufficient volume to contain complete spillage of all fluids contained within the APS during operation. This includes all fuel-wetted volumes within the pump assemblies and associated plumbing. The sump shall be equipped with a drain plug allowing personnel to drain the sump into a container for disposal.

3.3.1.3.10. Other APS Components. Provisions such as a scraper launcher and receiver shall be included at each APS for conduit cleaning and fuel displacement operations. Location of such provisions shall be such that execution of these operations can be accomplished without interrupting the flow of the pumping station.

3.3.1.3.11. Slope Operation. The RIFTS System shall meet the performance requirements specified herein with the APS operating on slopes of up to 20 degree from level in any direction.

3.3.1.3.12. Fire Suppression. The APS shall incorporate an active fire suppression system designed to detect and extinguish an APS fire in accordance with NFPA-12. The fire detection system shall be designed to minimize the possibility of false alarm. UV/IR type sensors should be considered in order to minimize false alarms.

In the event of a fire, the fire suppression system shall detect the fire and flood the APS with sufficient CO2 gas to completely extinguish a fire. The fire suppression system shall alert the control system that a fire is present. The APS control system shall respond by shutting down the APS, sounding audible and visible alarms located at the APS, and alerting the C2M that a fire is present. The fire suppression system shall use an independent power source. If batteries are used, a method of recharging shall also be included. To minimize the number of APS components, the APS power source may be used for recharging but shall be isolated from the starting system. Manual activation of the fire suppression system shall be available, readily accessible, and clearly marked. Manual activation shall be possible even in the event of a complete loss of all APS power.

3.3.1.3.13. Configurations. The configuration of each pumping station shall be as specified in 3.3.3.6. A maximum of two modules shall be allowed for each pumping station with a desired of one module per pumping station. It is desired that all components, such as APS power source, strainers, receivers, launchers (if used), and etc be mounted on the same module with the pump assemblies. Provision



shall be made to securely store all the support equipment and fire suppression equipment on the modules(s). The APS configuration shall minimize the amount of time it takes to set up the pumping stations in order to meet the system employment and retrieval rates specified in 3.3.3.1 and its subparagraphs.

3.3.1.4. Command and Control Module (C2M). The Command and Control Module is the central command for the distribution operation of the RIFTS. The C2M shall be comprised of two main functions, system control and leak detection. The C2M shall display real-time status information from pumping station to pumping station, provides real-time control of pumping stations, and perform leak detection of the deployed distributed system. The C2M shall require only one operator for operation.

3.3.1.4.1. System Control. System control shall provide real-time status and control of the APSSs. It is desirable to use the same programming language for the system control as well as for the pumping station automation to allow easy support. The system control shall allow user input to tailor to different deployed system configuration. The system control shall graphically display a complete configuration of the deployed system. This shall allow the operator to point and click to the desired location for the specific information. The system control shall provide a quick summary status of each pumping station. For the minimum, specific real-time information of each pumping station shall include pump inlet and outlet pressure, fluid mass flow rate, fluid temperature, generator battery voltage, engine oil pressure and temperature, pump status, valve status, differential flow rate, leak alarm, leak size, and leak location. In addition, the system control shall allow the operator to have real-time control of the pump assembly start up and shut down, primary or secondary pump selection, pumping direction, pump operating speed (idle-100%). A user-friendly graphical interface shall be provided to perform these operations and to display information.

3.3.1.4.2. Leak Detection. Leak detection shall provide RIFTS with the capability to automatically detect and locate small leaks (loss of 10 gallons per minute (gpm) anywhere along the RIFTS), or a leak rate of 1.25% of the total flow. Sensors incorporated into the APSSs shall be used to provide the necessary data for leak detection (see 3.3.1.3.4). Leak detection shall not introduce additional installation and retrieval requirements to RIFTS. Capabilities shall include detecting leaks that exist before the RIFTS system is put into operation (i.e. loose coupling or an existing puncture in the conduit), as well as when the system is in operation. The leak detection software shall be easily adaptable to varying RIFTS configuration (i.e. different distance between pumping stations over deployment on varying terrain). In the event that a leak occurs, an alarm shall sound off to notify the C2M operator and the C2M shall display the location and size of the leak.

3.3.1.4.3. Data Storage. A separate database shall be provided to collect all the sensor data from the APSSs as well as the data generated for the leak detection. Values, date, and time information shall also be stored with each data record. Microsoft SQL 2000 or equivalent shall be used. Stored data may be used for real-time analysis and observation, post-operational analysis, training based on real-world information, and transaction recording.

3.3.1.4.4. Hardware. One computer system shall be dedicated for all the system control operations while a separate computer system shall be dedicated for the leak detection operations. The computer systems are required to ensure enough computer resource is available for both software applications to run. The two computer systems shall be capable of communicating with one another as well as with all the pumping stations. They shall be capable of sending and receiving data from each other and sending/receiving data and commands to the APSSs. Two flat-panel touch-screen video displays, minimum of 20 in size, shall be included to provide large, high-quality interface for the operator. One display shall be used to display the system layout of the deployed system while the other display shall be used to display the details of the individual APS. The touch-screen interfaces shall allow all operations of the C2M to be performed without the need for a keyboard interface. For each computer system, a keyboard and track ball shall be provided for use if needed.

3.3.1.4.5. Communication. The contractor shall determine the best suitable communication methods and provide the necessary communication devices for transmitting data between the two computer systems and the APSSs (see 3.3.1.3.7). Factors for considerations shall include, but not limited to, the following: spectrum allocation (U.S. versus foreign), interference (from other transmission or jamming), worldwide usability, data encryption (for security), and system commonality (use of existing assets when possible for reduced logistics). Using more than one communication option may be desirable to provide flexibility and redundancy.

3.3.1.4.6. Shelter. C2M shall either be configured inside an International Organization for Standardization Tactical Operations Center (ISO TOC) or a Standardized Integrated Command Post system Rigid Wall Shelter (SICPS RWS). The shelter shall house and protect all the C2M equipment, support equipment and supplies from the damaging effects of the environment and shall provide adequate space for all operator functions and tasks. The support equipment shall include, but not be limited to, the following: interior container lighting, workbench and desktop, mounted racks for computer systems, spare parts and tool storage cabinet, environmental control system for the shelter, power supply, sectional grounding rod, emergency lighting system for shelter, and camouflage cover system. In the case of an AC power outage for the C2M, means shall be provided for backup power to instantaneously kick in, and provide temporary power to the C2M for 12 hours and shall also protect the C2M from AC power surges or noise.

3.3.1.5. RIFTS Automated Trace Locator (RATL). RATL is a portable computer-based planning aid that will be used for trace planning prior to deployment. RATL shall assist the operator in determining the optimum deployment trace, location of pumping stations and associated equipment, and a materials list of components required to install the system. The RATL shall be adaptable to use terrain data such as Digital Terrain Elevation Data (DTED) and as well as incorporating mapping data to provide accurate trace for planning. Once onsite, the planning aid shall be used to refine the deployment location and develop precise pumping station locations. The RATL shall

be capable of running in stand-alone mode or in a networked environment. The RATL shall be capable of uploading the planned trace to the C2M. The RATL shall be developed to operate in Window XP operating system. A laptop type computer shall be dedicated for the RATL.

### 3.3.2. Other Components.

3.3.2.1. Conduit Repair Kit. The RIFTS shall include a repair kit to perform field repairs of the filled conduit. The repair kits shall include all necessary items (i.e. replacement conduit and couplings, knives, shears, wrenches, sockets, rags, instructions, etc.). No hazardous materials or shelf-life items, except for conduit sections, shall be included in the repair kit. The repair kit shall have the necessary items to perform up to 10 repairs and shall be capable of making 2 simultaneous repairs from pinhole size up to a large (2 ft in length) split. The repair kit shall allow two MOS qualified soldiers (see 3.6) to repair the filled conduit, with the pumping station off, in less than 30 minutes with no degradation in performance.

3.3.2.2. Displacement and Evacuation Kit. The RIFTS shall provide a mean to remove liquid, vapor, and air from the conduit. The conduit shall be emptied prior to recovery by the ERD(s). After displacement, no more than 0.3 percent (%) of fuel by weight of the deployed conduit capacity shall remain. The displacement and evacuation operations shall be completed without damage or degradation of the conduit. If the use of a generator is required as part of the displacement and evacuation process, the kit shall be compatible with the standard military generator (generator will be government furnished).

3.3.2.3. Suspension Kit. The suspension kit shall be used to raise the conduit at road crossings, small streams, and other areas where nestable culverts or road guards may not be used. The kit components shall provide enough material for one 200-foot crossing and shall be contained in storage containers for ease in handling and transport. Assembly of the kit shall not require any special tools.

3.3.2.4. Spill Control Kit. The RIFTS shall include a spill control kit which contains all the materials necessary to clean up two 100-gallon fuel spills.

3.3.2.5. Road Crossing Kit. The RIFTS shall provide enough road crossing guard to protect at least 100 ft. of the specified conduit. It is desirable that the road crossing capability shall not require digging for installation. When properly installed in soft, dry sand, the roadway crossing guard shall not be damaged and shall protect the conduit from any damage resulting from the passage of any vehicles that exert a ground pressure of up to 100 psig. Crossing guard sections shall incorporate a means of mechanically linking sections together so gaps shall not be present or developed, under any loading condition, when two or more sections are used together. Crossing guard sections shall be stackable or capable of being layered to minimize occupation of space when stowed.

3.3.2.6. Major component batteries. All system batteries shall be US Army approved 6T-Series, maintenance-free types IAW ATPD 2206. Unless otherwise specified, Type II shall be used. Batteries shall be readily accessible for service and inspection and shall be of sufficient quantity and type to comply with the system and each major components starting, lighting, normal and surge electrical loads, reserve electrical power capacity, and maintenance requirements, engine, exhaust or electrical equipment during filling.

### 3.3.2.7. Containers

3.3.2.7.1. Reusable containers. Unless already provided, the non-major and other components of the RIFTS (e.g. adapters, kits), except for roadway crossing guards shall be stowed, handled, and transported in non-metallic reusable containers. Kit peculiar items shall be packaged together within the reusable containers. The non-metallic reusable containers shall have a minimum service life of 10 years, and shall be IAW SAE ARP 1967, modified as follows. All internal supports, fixtures, and attachments used to receive and secure the contained items shall be unaffected by fuel or raw water and shall not absorb fuel (see 3.4.2) and shall have the same anticipated life as the container. A plan indicating component placement within the container shall be provided for each container and secured to the inside of the each container cover. Containers shall have a method for the user to label the contents of the container with a label that can be replaced if user requires a change in the content of the container. All components shall be capable of being loaded manually without the need for any overhead lifting devices. Container closure shall use hand operated self-contained latches. Maximum gross weight of container and contents is 147 lbs. No more than four personnel (see 3.6) shall be required to lift the container and contents without injury to personnel or contents of the container. Air-filling valves, forklift pockets and data plates shall not be required. The reusable container(s) with contents shall also pass the transportability requirements of paragraph 3.4.1. The containers shall be water-vapor-proof and provide physical protection for all contents.

3.3.2.7.2. Storage containers. Except as specified, all RIFTS components (non-major components and all other accessories) shall be delivered and secured within a 8 x 8 x 20 storage container(s); no sliding and bumping of components or accessories shall occur during transportation. All dimensions and structure requirements shall be in accordance with the ISO-1C container(s) as specified in ISO 668 and 1496-1. In addition, the storage containers shall also be compatible with the employment vehicles (see 3.3.3.5). The storage container(s) shall be capable of being handled by the load handling system of the PLS and HEMTT-LHS; Container Handling Unit (CHU) shall not be used. The storage container(s) shall have an A-frame structure at one end with the bail bar, rollers on the opposite end to allow the container be loaded on the PLS trailer, and a rail system to provide the PLS and HEMTT-LHS handling capability. DIN 30722 and STANAG 2413 shall be used for the vehicle interface requirement. A packing and loading plan that provides detailed instructions on packing/repacking the components in the container shall be developed and provided with each container as a durable special instruction

sheet or plate depicting all components and photographs of the container after all components have been packed/repacked inside.

3.3.3. System Performance Requirements. The equipment provided by the contractors shall be able to perform as a full 50-mile RIFTS system.

3.3.3.1. Employment and Retrieval Rate. The RIFTS shall be capable of being emplaced at a minimum rate of 20 miles per 20-hour operational day with a desired emplacement rate of 30 miles per 20-hour operational day. The RIFTS shall be capable of being retrieved at a minimum rate of 10 miles per 20-hour operational day with a desired retrieval rate of 20 miles per 20-hour operational day. The minimum rates for both employment and retrieval shall include all mechanical handling during employment and retrieval operations and shall be maintained over any type of terrain that the employing vehicle is capable of traversing. No more than two employment vehicles shall be used for the emplacement and retrieval processes and no more than one employment vehicle shall be used for APS installation.

3.3.3.1.1. Start Time Definition. The start time for the emplacement process shall begin when all the equipment is off loaded at the start point. The start time for the retrieval process shall begin when the evacuation of hoseline starts.

3.3.3.1.2. Stop Time Definition. The stop time for the emplacement process shall be when the system is ready to issue fluid, this include pre-testing the system prior to system operation. The stop time for the retrieval process shall be when all the system components are returned to the shipping configuration.

3.3.3.1.3. Terrain. Employment and retrieval rates shall be achieved when deployed over the terrain profile as depicted in Figure 1. The movement terrain expected to be encountered by the RIFTS is shown in Table 1.

3.3.3.2. Fluid transfer capability. The system shall be capable of transferring a minimum of 850,000 gallons per 24-hour operational day with a desired transfer capability of 1,000,000 gallons per day (gpd).

3.3.3.3. Anchoring. Proper anchoring shall be provided to prevent the conduit from moving into the roadway while the product is pumping through the line. Movement of the conduit during filling, pressurizing, operation, and evacuation shall be limited or controlled so the conduit does not move into any adjacent roadways.

3.3.3.4. Required Personnel. All installation and tear down processes (i.e. employment, retrieval of the conduit, pumping station installation, C2M installation, and etc) shall not require more than 5 Military Occupational Specialty (MOS) 77F soldiers (see 3.6) per employment vehicle, excluding the driver of the employment vehicle. Employment of the RIFTS over terrain requiring gap and bridge crossings may require additional personnel.

3.3.3.5. Employment Vehicles. All RIFTS modules shall be capable of being loaded and transported on a HEMTT Load Handling System (HEMTT-LHS), Palletized Load System (PLS) truck, and PLS trailer. The ERD shall be capable of being operated while mounted on all vehicles.

3.3.3.6. Configuration. Configuration of the ERD and APS modules shall be compatible with the HEMTT-LHS, PLS, and PLS trailer. Each module shall have the same envelope dimensions and corner fittings of the ISO-1C container as specified in ISO 668 and ISO1161. Each module shall meet all applicable requirements of ISO 1496-1 and 1496-5; specifically, the 9-high stacking capability shall be met. All ERD and APS modules shall be capable of being handled by the PLS and HEMTT-LHS using only the load handling system; Container Handling Unit (CHU) shall not be used. The module shall have an A-frame structure at one end with the bail bar, and rollers on the opposite end to allow the container be loaded on the PLS trailer, and a rail system to provide the PLS and HEMTT-LHS handling capability. DIN 30722 and STANAG 2413 shall be used for the vehicle interface requirement.

3.3.3.6.1. Protective Cover. Protective cover(s) shall be used to enclose the ERDs and the APS for protection during transport and storage. Means shall be provided to ensure the cover is securely attached to each module and shall meet the weather proofness requirement in accordance with (IAW) ISO1496-1. Protective cover is allowed to be removed during operation of the components.

3.3.3.7. Service and Storage Life. The RIFTS shall have a minimum shelf life of at least 15 years with a desire of 20 years. The RIFTS shall have a useful life of at least 10 years with a desire of 15 years once wetted with fuel.

3.3.4. Environmental Requirements. The RIFTS shall operate in hot, basic and cold climates, as defined in AR 70-38. The RIFTS shall be capable of being stored, maintained, and operated under the following environmental conditions.

3.3.4.1. Operational Temperature. The RIFTS shall be capable of continuous operation over the ambient temperature range of -25 F to 120 F.

3.3.4.2. Storage Temperature. The RIFTS, when stored for two years in an open environment or four years in a warehouse environment, shall not be damaged by any ambient temperature from -50 oF to +160 oF with humidity not to exceed 50%.

3.3.4.3. Temperature Shock. The RIFTS System shall be capable of operating after exposure to sudden changes (5 minutes or less) in the

thermal environment from 160F to -60F (71C to -51C) and from -60F to 160F (-51C to 71C). No chemical deterioration shall result from this exposure.

3.3.4.4. Temperature Shock. The RIFTS System shall be capable of operating after exposure to sudden changes (5 minutes or less) in the thermal environment from 160F to -60F (71C to -51C) and from -60F to 160F (-51C to 71C). No chemical deterioration shall result from this exposure.

3.3.4.5. Nuclear, Biological and Chemical (NBC) Protection. RIFTS shall be NBC contamination survivable and capable of operating in an NBC environment. Nuclear survivability is not required. The RIFTS shall be capable of being operated and serviced by personnel wearing Mission Orientated Protective Posture (MOPP IV) chemical, biological and radiological clothing (see 4.2) without special tools or support equipment. The design of the system components shall minimize the collection and retention of contaminants and decontaminates. The system and components shall be decontaminable to negligible risk levels as defined in Army-approved NBC contamination survivability criteria and AR70-75. All seals shall be resistant to the NBC agents and compatible with decontamination procedures and material.

3.3.4.6. Sand. The RIFTS shall perform as specified herein in a blowing sand environment when subjected to a minimum sand concentration of 0.062 0.015 grams per cubic foot (g/ft<sup>3</sup>) at a minimum wind velocity of 3540 feet per minute (ft/min).

3.3.4.7. Dust. The RIFTS shall perform as specified herein in a blowing dust environment when subjected to a minimum dust concentration of 0.3 0.2 g/ft<sup>3</sup> at a minimum wind velocity of 1750 ft/min.

3.3.4.8. Humidity. The RIFTS System shall meet the performance requirements of this document during exposures to relative humidity of up to 95 percent. Material shall not be physically or chemically deteriorated as a result of exposure to the humidity conditions.

3.3.4.9. Solar Radiation. The RIFTS shall perform as specified with up to 355 British thermal units per square foot per hour (Btu/ft<sup>2</sup>/hr) of solar radiation.

3.3.4.10. Rain. The RIFTS shall perform as specified herein when subjected to a wind driven rainfall of:

- a. Rainfall of 4 in/hr (102 mm/hr) for 30 minutes when driven by wind from any direction at velocities up to 40mph (18 m/sec).
- b. Rainfall of 2 in/hr (5013 mm/hr) for four hours when driven by wind from any direction at velocities up to 40 mph (18 m/sec).

3.3.4.11. Salt Fog. The RIFTS System shall meet performance requirements after exposure to salt fog atmosphere. The salt fog atmosphere shall consist of a salt solution defined as 5 percent by weight NaCl and 95 percent by weight distilled water. The exposure zone temperature range shall be 90 F to 95 F. The fog density shall be approximately 3 quarts solution in 10 cubic feet of space enclosure. shall withstand damage from being exposed to salt fog

3.3.4.12. Fungus. The RIFTS shall meet performance requirements after exposure to fungus in a 86 F (30 C) atmosphere with a 95 percent relative humidity for a 28 day duration

3.3.4.13. Altitude. The RIFTS system and components, in storage configuration, shall withstand the low-pressure environment at a minimum altitude of 40,000 ft. The RIFTS shall perform as specified at altitudes up to and including 9,000 ft above sea level at a maximum temperature of 107 F. It shall also retain the system integrity after exposure to a pressure altitude of 40,000 ft.

3.3.4.14. Shock and Vibration. The RIFTS shall withstand shock and vibration induced during vehicular transport over all types of roads and cross-country terrain. The RIFTS shall also withstand shock and vibration associated with ground, rail, sea and air transportation. Individual module in the RIFTS shall also resist shocks encountered in servicing and handling.

3.3.4.15. Noise Limits. Steady-state noise produced by the RIFTS shall not exceed 85 decibels (dB(A)) at the operators position and at occasionally occupied positions (see 4.3).

3.3.4.16. Electromagnetic interference (EMI). The electromagnetic radiated interference and susceptibility characteristics of the RIFTS shall not exceed the limits specified in MIL-STD-461 for Army ground equipment or systems.

3.3.4.17. High-altitude Electromagnetic Pulse (HEMP). The RIFTS shall not exhibit any malfunction or degradation of performance when subjected to the default free-field electromagnetic pulse (EMP) environment IAW MIL-STD-464.

3.3.4.18. Ozone. Unless specified otherwise, all rubber or elastomeric components used on the RIFTS shall be ozone resistant as tested IAW ASTM D1171, Method A, utilizing Ozone-Chamber Exposure Method B with 70-hour exposure time.

3.4. Interface Requirements.

3.4.1. Transportability. The RIFTS shall be capable of being transported by military or commercial tractors, tractor/trailer combinations, trains (rail), marine vessels, and aircraft per MIL-STD-1366 and 3.4.1.6. The RIFTS shall be equipped with tiedowns and slinging provisions. The RIFTS shall be capable of withstanding the impact forces encountered in shipment without damage or permanent deformation for the modes and methods listed below.

- Transport configuration.
- Ground vehicles
- Rail transport
- Marine Vessels
- Fixed wing
- Rotary wing

3.4.1.1. Tiedown Provisions. All individual major RIFTS components shall be equipped with tiedowns provisions IAW MIL-STD-209. The tiedowns provisions shall restrain the components without weld failure, permanent deformation, cracking, loosening, or breaking of the provision or its connecting structural components.

3.4.1.2. Slinging Provisions. All individual major RIFTS components shall be equipped with slinging provisions. Slinging provisions, IAW MIL-STD-209, shall be located so that at least 1-in. clearance is maintained between slings and all exterior parts. Reinforcement may be fastened to members that shall withstand stresses, consistent with the amount and direction of pull. Slinging provisions may also be used as tiedown provisions when such provisions meet the requirements specified in 3.4.1.1.

3.4.1.3. Highway Transport. When transported on commercial or military vehicles, the RIFTS shall be within the highway permit limits for all U.S. states and the general unrestricted transport in NATO countries IAW MIL-STD-1366 regardless of transport mode. This shall apply to both the transport configuration (see 3.4.1) and the individual components when properly positioned and attached on the employment vehicles (see 3.3.3.5).

3.4.1.4. Rail Transport. The RIFTS shall be rail transportable in the U.S. and North Atlantic Treaty Organization (NATO) countries without restriction. The RIFTS shall have a dimensional profile within the Gabarit International de Chagement (GIC) outline diagram (see MIL-STD-1366) when loaded aboard a 50-in high rail car.

3.4.1.4.1. Rail Impact. The RIFTS shall be capable of withstanding shock loads resulting from rail shipment or railroad car impacts as described in MIL-STD-810, without failure, damage, permanent deformation, or reduction in operational or design capability.

3.4.1.5. Marine Transport. The RIFTS shall be transportable by commercial ships and barges, Army landing craft and barges, the Logistics Support Vessel (LSV) and the Landing Craft Utility (LCU).

3.4.1.6. Aircraft Transport.

3.4.1.6.1. Fixed-wing Aircraft. The RIFTS or components shall be internally transportable by C130 fixed-wing aircraft and larger commercial and USAF aircraft in the transport configuration (see MIL-HDBK-1791).

3.4.1.6.2. Rotary-wing Aircraft. It is desirable that the major components, non-major components, and kits be internally (size permitting), and externally (regardless of size) transportable by CH47 rotary-wing aircraft.

3.4.2. Fuel. The RIFTS shall be capable of pumping and the system engines shall be capable of operating on all military and commercial kerosene based fuels conforming to, as a minimum, those listed below without restrictions or kits. JP-8 shall be the designated primary fuel for both the RIFTS pump assemblies and power source.

- MIL-DTL-83133 (JP-8) (NATO F-34) (see 4.4)
- MIL-DTL-5624 (JP-5) (NATO F-44) (see 4.4)
- A-A-52557 (Diesel-military, including NATO F-54) (see 4.4)
- ASTM-D975 (Diesel-US commercial)
- ASTM-D1655 (Jet A-1/Jet A) (NATO F-35) (see 4.4)
- MIL-F-46162 (Type I and II Referee Grade Diesel)

3.4.3. Lubricants. The RIFTS, depending on the ambient temperature, shall use one or more of the following lubricating oils: MIL-PRF-2104, MIL-PRF-46167, and MIL-PRF-21260. Gear oil, if required, shall conform to MIL-PRF-2105, antifreeze to A-A-52624, and grease to MIL-PRF-10924.

3.4.4. Other Systems Compatibility. The RIFTS shall be capable of receiving fuel from and providing fuel to the storage and distribution systems of existing tactical pipeline system, other services, allied nations, and commercial sources.

3.5. Ownership and Support Requirements.

3.5.1. Safety. All electrical wiring and any rotating or reciprocating parts shall be electrically and physically safe, and shall be guarded so as not to be a hazard to operating personnel and to minimize the hazard of fire in the event of a fuel spillage or leakage from conduit and connections. All electrical terminals shall be completely enclosed or insulated to prevent inadvertent contact by personnel or equipment that may cause arcing to occur. An emergency shutoff device shall be located at each of the operator stations for the ERD power unit, the ERD and the pumping station, to completely shut off/stop each one independently in case of accident, malfunction, or potential safety hazard within 5 seconds after activation. Danger or caution signs, labels and markings shall be used to warn of potential or specific hazards.

3.5.2. Environmental Hazard Prevention. In addition to the fuel spill control kit (see 3.3.2.4) and the APS secondary containment, provisions shall be made and included with each unit/system to prevent fluid leakage and safely contain leakage and spillage during all storage, transport and operational use of the RIFTS. RIFTS components shall comply with all US HAZMAT, OHSA, safety, and transportation requirements, regarding prevention of inadvertent fuel discharge or leakage during operation, storage, and maintenance, including evacuation of conduit.

3.5.3. Reliability. The RIFTS APS mean time between hardware essential function failure (MTBHEFF) shall not be less than 2400 hours. The RIFTS C2M mean time between hardware essential function failure (MTBHEFF) shall not be less than 560 hours. The RIFTS pressure reducing station mean time between hardware essential function failure (MTBHEFF) shall not be less than 2900 hours (if applicable). The RIFTS deployment and retrieval reliability shall be a mean cycles between hardware essential function failure of not less than 50 cycles, where one cycle includes the complete deployment and retrieval of one 5 mile conduit set. A 5-mile RIFTS set mean time between hardware essential function failure (MTBHEFF) shall not be less than 600 hours. The reliability numbers are based on a definition of a 5-mile set that has 4 pump stations. (see 4.5)

3.5.4. Maintainability. The RIFTS shall provide easy access to components requiring repair, replacement, routine or frequent maintenance or adjustment. The RIFTS System shall be modular in construction. The mean time to repair (MedTTR) shall not exceed 1.5 hours for all essential unscheduled maintenance demands (EUMD). The maximum time to repair (MAXTTR-90) for 90% of all EUMD shall not exceed 3 hours.

3.5.4.1. Servicing, Operation, and Maintenance. The RIFTS support concept shall use three-level organic maintenance, and shall conform to the requirements and guidance according to AR 750-1, DA Pam 750-35, and DA Pam 738-750. The RIFTS shall require as few special tools or test equipment as possible, and the maximum utilization of existing DoD and US Army tools and support equipment is required. (see 4.6). If required to support the RIFTS, all special tools and test equipment shall be identified and provided by the contractor as part of the RIFTS to assemble, disassemble, maintain, and repair by the designated RIFTS operators and maintainers as required below. Only standard Army test, measurement, and diagnostic equipment (TMDE) are anticipated for the RIFTS. To provide rapid field diagnostic of failures, contractor shall maximize the use of Built-in-Test (BIT) / Built-in-Test equipment (BITE).

3.5.4.2. Operator. All tools, special tools, and test equipment required to perform operator-level Preventive Maintenance Checks and Services (PMCS) shall be provided with each system along with the required stowage space (see 4.7).

3.5.4.3. Operator Test. The operator shall be provided with fault isolation instructions enabling the isolation of critical component failure causes through observation of system operation and the BIT display.

3.5.4.4. Test Points. Sufficient test points shall be incorporated and identified in the major components and modules. The test points shall permit fault isolation without removing protective coatings, breaking solder connections or removing fixed covers and shields.

3.5.5. Lighting. All components of the RIFTS system shall be effectively operable by the operator in reduced visibility, nighttime, and blackout conditions. Lighting shall allow the reading of dials and gages, the reading of item identifications, instructions, and warnings, and the operation of switches and controls, etc. Control panel illumination shall not require dark adaptation by the user.

3.5.5.1. Lighting, non-tactical. Permanent or detachable lighting shall be provided to insure safe operation of the RIFTS in darkness and periods of reduced visibility.

3.5.5.2. Lighting, tactical/blackout operations. Lighting provisions shall meet the following requirements:

Ninety-five % of the light energy emitted by each light source shall be at wavelengths below 700 nanometers.

All light sources shall be dimmable to 0.05 ft-Lamberts (fL) or less. A single on/off blackout switch, labeled BLACKOUT SWITCH, shall control all ERD and APS light sources.

3.5.6. Grounding, Bonding, and Clamps. The RIFTS shall provide complete electrical continuity throughout the system. A metal-to-metal contact shall be provided between the vehicle and the ERD(s), the ERD and any external power source, and the pumping station unit to ground. Provisions shall also be made for the conduit to ensure continuous electrical bond is maintained between the hose ends to

include fittings. Grounding rods and grounding wires equipped with plier-type clamps shall be provided for grounding all appropriate major components (see 3.3.1) during operation and the deployed end of the conduit regardless of deployed conduit length. The grounding wires shall be permanently attached to the ground rods or means shall be provided for attachment, without tools, that will ensure electrical continuity. The grounding rods shall include an integral hammer and anvil, of sufficient size to drive the rods into compact soil. The grounding rods, which may be collapsible, shall be not less than 68 inches long when in operational service configuration.

#### 3.6. Manpower and Personnel Integration (MANPRINT).

3.6.1. Manpower and Personnel: The RIFTS will be constructed, pressure tested, operated, and maintained by the Quartermaster Pipeline and Terminal Operating Company (QTOC). The RIFTS shall not add any additional limitations on the operator or maintainer Military Occupational Specialties (MOSs). The MOS 77F will operate the RIFTS and system components will be maintained and repaired by MOS 63J. The skill level for the MOSs shall be 10 level. DA Pam 611-21 designated the military-trained personnel as follows:

MOS 77F (Petroleum Supply Specialist).  
MOS 63J (Quartermaster and Chemical Equipment Repairman).

3.6.2. Human Factors Engineering (HFE): Human factors engineering criteria, principles, and practices shall be considered during design and engineering of the RIFTS, including those related to an effective machine-operator interface. Areas of concern include ease of operation, maintenance, clarity of control and display integration, controls, signals, instructions, labels and markings, safety of operation, anthropometry, and hazard and safety criteria, as applicable. MIL-STD-1472 or commercial equivalent standards may be used for guidance regarding HFE considerations. All features of other RIFTS shall be operable by the 95th percentile male to 5th percentile female. All system controls and equipment shall be easily accessible and operable per specified requirements in all climatic conditions. The RIFTS's control panel, as referenced in Para 3.3.1.2.4., shall contain controls, gauges, indicators, etc., that are easy to read during day/night operations, understand, and use. All features of the RIFTS shall be operable by soldiers wearing cold/wet weather protective clothing and ensemble for Mission Orientated Protective Posture (MOPP) Level IV (see 3.3.4.4 and 4.2.). Operation of one control while wearing protective clothing shall not result in the accidental activation of another control.

3.7. Treatment and Painting. Unless otherwise specified, all external surfaces of the system except as noted below, regardless of the material selected, shall have a finish coat of Chemical Agent Resistant Coating (CARC) paint IAW MIL-C-53039 or water Dispersible Aliphatic Polyurethane, Chemical Agent (Waterborne CARC) paint IAW MIL-DTL-64159. The color shall be Desert Tan 686A, color number 33446 IAW FED-STD-595.

a. The color of all other surfaces, to include those within a housing, those behind insulation material, and the insulation retainer, if used, shall be Desert Tan 686A, color number 33446 or black, color number 37030 IAW FED-STD-595 or the manufacturer standard color, if approved by the Government.

b. The following items shall not be painted: terminal wiring connections, governor linkage, instruction diagrams and plates, rectifiers, relays, switches, circuit interrupters, instrumentation, rubber, lubrication fittings, conduit, couplings, and all other parts whose operation or function would be adversely affected. Insulation material shall be painted unless the sound absorbing characteristics of the material are compromised.

c. Identification plates shall be installed following application of the final finish coat.

d. CARC paint shall not be applied to surfaces that may exceed temperatures of 400F.

3.8. Identification, marking and information. The RIFTS components shall be permanently and legibly marked with the manufacturer's name, part number, and Commercial and Government Entity Code (CAGEC). Unless a separate transportation data plate is provided, the identification shall also include the unit cubic measure and weight. For the APS, the label shall be viewable from the outside without requiring the opening of any doors or access panels.

#### 4. Definitions.

4.1. Employing, Employment, or Emplacement. All wordings such as employ, employing, employment, or emplacement refer to all components and system installation processes. These include laying out conduit, pumping station set up, and etc

4.2. Mission Orientated Protective Posture (MOPP). MOPP IV protection consists of a two piece protective overgarment, protective mask with hood, overboots and rubber gloves with cotton liners. The overgarment is closed and hood is pulled down and adjusted (Field manual FM-3-100).

4.3. Operators and occasionally occupied positions. The operator's position is defined as 24 in. horizontally and 12 in. vertically from the pumping assembly control panel. Occasionally occupied positions are defined as anywhere within a 20-ft diameter around each of the major components but outside a circle of 4-ft diameter around the engine and 55 in. above the ground.

4.4. NATO fuel designations. STANAG 1135 describes the NATO fuel designations F-34, F-35, F-44 and F-54.

#### 4.5. Failure Definition

4.5.1. Essential Functions. Essential functions are the minimum operational tasks that the system must be capable of performing to successfully complete its mission. The loss of an essential function, regardless of when it occurs, will be scored as an essential function failure (EFF).

Emplace Conduit: RIFTS components must allow for the system to be emplaced at a minimum rate of 20 miles per 20 hours day.

Recover Conduit: RIFTS components must allow for the system to be recovered at a minimum rate of 10 miles per 20 hours day.

Transport fuel: The RIFTS must provide for transfer of bulk petroleum at the minimum throughput rate of 850,000 (Threshold) 1,000,000 (Objective) Gallons per 24 hours day. This overall function is dependent on the following essential functions:

Receive/Issue Fuel. The RIFTS must receive fuel from any bulk source and be able to provide fuel to any bulk receiver.

Pump Fuel. The RIFTS pump stations must pump fuel under field conditions at volume and flow rates consistent with the minimum throughput rates.

Provide System Control. The control module must be capable of controlling and monitoring all aspects of RIFTS operation at its pump stations, pressure reducing stations or other components.

Leak Detection: The RIFTS leak detection system must automatically detect and locate leaks of 10 gallons per minute or greater.

4.5.2. Formal Failure Definition. Any event that causes the inability of the RIFTS to perform any of its essential functions will be scored as an essential function failure (EFF). Also, any event that causes the use of the system to be discontinued, to include those events posing threat of serious injury to personnel, equipment, or the environment will also be considered EFF. Any Class 3 or greater fuel leak that cannot be immediately corrected by the operator (within 5 minutes) will be considered an EFF. Routine Operating Procedures, performed by the crew and prescribed in user manuals or which can be performed within 15 minutes using on board tools / Basic Issue Items (BII), will not be scored as an EFF. Examples of Routine Operating Procedures are tightening of easily accessible fittings, clamps, bolts and fasteners. Additional Routine Operating Procedures may be identified as testing progresses and listed in updates to the FDSC. Scoring conference members may later establish limits on Routine Operating Procedures if their frequency adversely affects mission accomplishment. If these limits are exceeded, the events will be recorded and scored on their own merits as failures with associated maintenance demands.

4.6. Special tools and test equipment. Special tools and test equipment are defined as not found in the Armys General Mechanics tool kit (NSN 5180-00-177-7033), Organizational Maintenance Common #1 tool kit (NSN 4910-00-754-0654), Common #2 tool kit (NSN 4910-00-754-0650), and tool kit Supplement #1 (NSN 4910-00-754-0653), and U.S. Army Supply Catalogs 4910-95-A73 and 4910-95-A74. The SKO Supply Catalog website is <http://158.2.5.50/codebase/index.html>. These kits and other tool kits/sets (US Army) are managed by USA TACOM-Rock Island, AMSTA-AC-CTTS, Rock Island, IL, 61299.

4.7. PMCS. PMCS includes assembly, disassembly, adjustments, maintenance, diagnose and repair or reporting of the condition of the system during the required system service life.



Attachment 2. RIFTS TDM Requirements List

Performance Specification Paragraph No.	Required for RIFTS TDM	Objective for RIFTS TDM
3. Requirements	X	
3.1 system Description	X	
3.1.1 Mission	X	
3.1.2 Phases of Operation	X	
3.2. Materials and Workmanship	X	
3.2.1 Workmanship	X	
3.2.2 Interchangeability	X	
3.2.3 Metals	X	
3.2.4 Non-metals	X	
3.2.5 Deterioration prevention and control	X	
3.2.6 Protective finishes and coatings	X	
3.2.7 Corrosion Control Performance	X	
3.2.8 Recycled, recovered, or environmentally preferable materials	X	
3.3 Operating and Design Requirements	X	
3.3.1 Major Components	X	
3.3.1.1 Conduit	X	
3.3.1.1.1 Pressure	X	
3.3.1.1.2 Conduit	X	
3.3.1.2 Emplacement and Retrieval Device (ERD)	X	
3.3.1.2.1 Employment and Retrieval	X	
3.3.1.2.2 Power Source	X	
3.3.1.2.3 Conduit Storage	X	
3.3.1.2.4 Control Panel	X	
3.3.1.2.5 Communication	X	
3.3.1.2.6 Configuration	X	
3.3.1.3 Automated Pumping Stations (APS)	X	
3.3.1.3.1 Pump Assembly	X	
3.3.1.3.2 Pump Assembly Switching	X	
3.3.1.3.3 Starting System	X	
3.3.1.3.4 Measurements and Instrumentation	X	
3.3.1.3.5 Automated Control System	X	
3.3.1.3.5.1 Control system Hardware, Software, and Functions	X	
3.3.1.3.5.2 Inlet and Outlet Pressure Fault Conditions	X	
3.3.1.3.6 Local User Interface	X	
3.3.1.3.7 Communication	X	
3.3.1.3.8 Strainer Assembly	X	
3.3.1.3.9 Secondary Containment	X	
3.3.1.3.10 Other APS Components	X	
3.3.1.3.11 Slope Operation	X	
3.3.1.3.12 Fire Suppression		X
3.3.1.3.13 Configurations	X	
3.3.1.4 Command and Control Module (C2M)	X	
3.3.1.4.1 System Control	X	
3.3.1.4.2 Leak Detection	X	
3.3.1.4.3 Data Storage	X	
3.3.1.4.4 Hardware X		
3.3.1.4.5 Communication	X	
3.3.1.4.6 Shelter		X
3.3.1.5 RIFTS Automated Trace Locator (RATL)		X

Performance Specification Paragraph No.	Required for RIFTS TDM	Objective for RIFTS TDM
3.3.2 Other Components	X	
3.3.2.1 Conduit Repair Kit	X (just enough for one repair)	
3.3.2.2 Displacement and Evacuation Kit	X	
3.3.2.3 Suspension Kit		X
3.3.2.4 Spill Control Kit		X
3.3.2.5 Road Crossing Kit		X
3.3.2.6 Major Component Batteries	X	
3.3.2.7 Containers		X
3.3.2.7.1 Reusable Containers		X
3.3.2.7.2 Storage Containers		X
3.3.3 System Performance Requirements	X	
3.3.3.1 Employment and Retrieval Rate	X	
3.3.3.1.1 Start Time Definition	X	
3.3.3.1.2 Stop Time Definition	X	
3.3.3.1.3 Terrain	X	
3.3.3.2 Fluid Transfer Capability	X	
3.3.3.3 Anchoring	X	
3.3.3.4 Required Personnel	X	
3.3.3.5 Employment Vehicles	X	
3.3.3.6 Configuration	X	9-high stackable
3.3.3.6.1 Protective Cover	X	
3.3.3.7 Service and Storage Life	X	
3.3.4 Environmental Requirements		X
3.3.4.1 Operational Temperature		X
3.3.4.2 Storage Temperature		X
3.3.4.3 Temperature Shock		X
3.3.4.4 Nuclear, Biological, and Chemical (NBC) Protection		X
3.3.4.5 Sand		X
3.3.4.6 Dust		X
3.3.4.7 Humidity		X
3.3.4.8 Solar Radiation		X
3.3.4.9 Rain		X
3.3.4.10 Salt Fog		X
3.3.4.11 Fungus		X
3.3.4.12 Altitude		X
3.3.4.13 Shock and Vibration		X
3.3.4.14 Noise Limits		X
3.3.4.15 Electromagnetic Interference (EMI)		X
3.3.4.16 High-altitude Electromagnetic Pulse (HEMP)		X
3.3.4.17 Ozone		X
3.4 Interface Requirements		X
3.4.1 Transportability		X
3.4.1.1 Tiedown Provisions		X
3.4.1.2 Slinging Provisions		X
3.4.1.3 Highway Transport		X
3.4.1.4 Rail Transport		X
3.4.1.4.1 Rail Impact		X
3.4.1.5 Marine Transport		X
3.4.1.6 Aircraft Transport		X
3.4.1.6.1 Fixed-wing Aircraft		X
3.4.1.6.2 Rotary-wing Aircraft		X
3.4.2 Fuel	X	
3.4.3 Lubricants	X	
3.4.4 Other Systems Compatibility		X



Performance Specification Paragraph No.	Required for RIFTS TDM	Objective for RIFTS TDM
3.5 Ownership and Support Requirements		X
3.5.1 Safety		X
3.5.2 Environmental Hazard Prevention		X
3.5.3 Reliability		X
3.5.4 Maintainability		X
3.5.4.1 Servicing, Operation, and Maintenance		X
3.5.4.2 Operator		X
3.5.4.3 Operator Test		X
3.5.4.4 Test Points		X
3.5.5 Lighting	X	
3.5.5.1 Lighting, non-tactical	X	
3.5.5.2 Lighting, tactical/blackout operations	X	
3.5.6 Grounding, Bonding, and Clamps	X	
3.6 Manpower and Personnel Integration (MANPRINT)		X
3.6.1 Manpower and Personnel		X
3.6.2 Human Factor Engineering (HFE)		X
3.7 Treatment and Painting		X
3.8 Identification, Marking, and Information		X

Except as indicated, all requirements listed in paragraphs from 3.3.4 to 3.91 shall be treated as design considerations only. Testing will not be required for these requirements.

MIL-DTL-31000B

TDP OPTION SELECTION WORKSHEET  
CONCEPTUAL DESIGN DRAWINGS

1. THE DELIVERABLE PRODUCT SHALL BE:
  - a. Reproductions
  - b. Digital Data Format
2. The contractor's CAGE Code and document numbers shall be used.
3. Contractor format is acceptable. Forms shall be supplied by contractor.
4. ASME Y14.100 Engineering Drawing Practices (Commercial)
5. Items 1.a. and 1.b. will be discussed at the Start of Work Meeting.

CONTRACT DATA REQUIREMENT LIST

Form Approval OMB No. 0704-0188 Public reporting burden for this collection of information is estimated to average 440 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either these addresses. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

A. CONTRACT LINE ITEM NO.: B. EXHIBIT: C. CATEGORY:  
D. SYSTEM/ITEM: RAPIDLY INSTALLED FLUID TRANSFER SYSTEM (RIFTS)  
E. CONTRACT/PR NO.: DAAE07-03-C-L090 F. CONTRACTOR: Southwest Research Institute (SwRI)

1. DATA ITEM NO. A001  
2. TITLE OF DATA ITEM: COST/SCHEDULE STATUS REPORT (C/SSR)  
3. SUBTITLE: Progress Report  
4. AUTHORITY: DI-MGMT-81467(T) 5. CONTRACT REFERENCE: C.2.1.1  
6. REQUIRING OFFICE: AMSTA-TR-D/210  
7. DD 250 REQ: LT 8. APP CODE: 9. DIST. STATEMENT REQUIRED:  
10. FREQUENCY: MTHLY 11. AS OF DATE:  
12. DATE OF FIRST SUBMISSION: SEE BLK 16 13. DATE OF SUBS. SEE BLK 16  
14. DISTRIBUTION/ A. ADDRESSEE B. COPIES DRAFT / FINAL  
AMSTA-TR-D/210 lireb@tacom.army.mil 0/1  
AMSTA-AQ-ABGD/321 kostownp@tacom.army.mil 0/1  
15. TOTAL: 0/2

16. REMARKS  
First submission shall be 30 days after the Integrated Baseline Review.  
Subsequent submission due NLT the 10th working day of each month.  
To be Repro copy = electronic delivery to email: Lireb@TACOM.army.mil & kostownp@TACOM.army.mil

1. DATA ITEM NO. A002  
2. TITLE OF DATA ITEM: Safety Assessment Report  
3. SUBTITLE: SAR  
4. AUTHORITY: DI-SAFT-80102B 5. CONTRACT REFERENCE: C.2.2.4.2  
6. REQUIRING OFFICE:  
7. DD 250 REQ: DD 8. APP CODE: 9. DIST. STATEMENT REQUIRED: REQUIRED  
10. FREQUENCY: AS REQ 11. AS OF DATE:  
12. DATE OF FIRST SUBMISSION: SEE BLK 16 13. DATE OF SUBS. SEE BLK 16  
14. DISTRIBUTION/ A. ADDRESSEE B. COPIES DRAFT / FINAL  
AMSTA-CS-CZ adamsali@tacom.army.mil 1/1  
AMSTA-TR-D/210 lireb@tacom.army.mil 1/1  
15. TOTAL: 2/2

16. REMARKS  
Draft delivered 120 days prior to training.  
Government to review and provide comments 30 days after receipt of draft.  
Final SAR delivered NLT 60 days prior to training.  
To be Repro copy = electronic delivery to email: Adamsali@TACOM.army.mil

1. DATA ITEM NO. A003  
2. TITLE OF DATA ITEM: Performance Specification Documents  
3. SUBTITLE:  
4. AUTHORITY: DI-SDMP-81465(T) 5. CONTRACT REFERENCE: C.2.2.7.1  
6. REQUIRING OFFICE: AMSTA-TR-D/210  
7. DD 250 REQ: DD 8. APP CODE: 9. DIST. STATEMENT REQUIRED:  
10. FREQUENCY: ASREQ 11. AS OF DATE:  
12. DATE OF FIRST SUBMISSION: SEE BLK 16 13. DATE OF SUBS. SEE BLK 16  
14. DISTRIBUTION/ A. ADDRESSEE B. COPIES DRAFT / FINAL  
AMSTA-TR-D/210 lireb@tacom.army.mil 1 / 1

15. TOTAL: 1 / 1

16. REMARKS The performance specification shall be delivered in an editable and printable digital format (MS Word or equivalent).  
Draft performance specification delivered 45 days after user demonstration  
Government to review and provide comments 30 days after receipt of draft  
Final performance specification delivered 30 days after receipt of Government comments  
To be Repro copy = electronic delivery CD or email: lireb@TACOM.army.mil

TAILORING of DI-SDMP-81465(T): Delete para 10.2.2 through 10.2.10 entirely.

1. DATA ITEM NO. A004  
2. TITLE OF DATA ITEM: Scientific and Technical Reports  
3. SUBTITLE: Final Report  
4. AUTHORITY: DI-MISC-80711A 5. CONTRACT REFERENCE: C.2.2.7.2  
6. REQUIRING OFFICE: AMSTA-TR-D/210  
7. DD 250 REQ: DD 8. APP CODE: 9. DIST. STATEMENT REQUIRED:  
10. FREQUENCY: ASREQ 11. AS OF DATE:  
12. DATE OF FIRST SUBMISSION: SEE BLK 16 13. DATE OF SUBS. SEE BLK 16  
14. DISTRIBUTION/ A. ADDRESSEE B. COPIES DRAFT / FINAL  
AMSTA-TR-D/210, ATTN: Ms. Rebecca Li 2 / 2 CDs and 2 hard copies  
AMSTA-AQ-ABGD/321, ATTN: Ms. Pamela Kostowny, Cover Letter only  
15. TOTAL: 2 / 2 CDs and 2 hard copies  
16. REMARKS The Final Report shall be delivered in a printable digital format on CD.  
Two hard copies of the final version shall also be delivered.  
Draft Final Report delivered 75 days after user demonstration  
Government to review and provide comments 30 days after receipt of draft  
Final Report delivered 30 days after receipt of Government comments

1. DATA ITEM NO. A005  
2. TITLE OF DATA ITEM: Conceptual Design Drawings  
3. SUBTITLE: As-Built Drawings  
4. AUTHORITY: DI-SESS-81001B 5. CONTRACT REFERENCE: 2.2.7.3  
6. REQUIRING OFFICE: AMSTA-TR-D/210  
7. DD 250 REQ: DD 8. APP CODE: 9. DIST. STATEMENT REQUIRED:  
10. FREQUENCY: ASREQ 11. AS OF DATE:  
12. DATE OF FIRST SUBMISSION: SEE BLK 16 13. DATE OF SUBS. SEE BLK 16  
14. DISTRIBUTION/ A. ADDRESSEE B. COPIES DRAFT / FINAL  
AMSTA-TR-D/210, ATTN: Ms. Rebecca Li 0 / 2 CDs and 2 hard copies  
15. TOTAL: 0 / 2 CDs and 2 hard copies  
16. REMARKS Drawing information is found in Attachment 003  
The drawings shall be delivered in a printable digital format on CD.  
Two hard copies shall also be delivered.  
Drawings delivered at the time the Final report (A004) is due.

1. DATA ITEM NO. A 006  
2. TITLE OF DATA ITEM: Test Plan  
3. SUBTITLE:  
4. AUTHORITY: DI-NDTI-80566 5. CONTRACT REFERENCE: C.2.3.1  
6. REQUIRING OFFICE: AMSTA-TR-D/210  
7. DD 250 REQ: DD 8. APP CODE: 9. DIST. STATEMENT REQUIRED:  
10. FREQUENCY: ASREQ 11. AS OF DATE:  
12. DATE OF FIRST SUBMISSION: SEE BLK 16 13. DATE OF SUBS. SEE BLK 16  
14. DISTRIBUTION/ A. ADDRESSEE B. COPIES DRAFT / FINAL  
AMSTA-TR-D/210 lireb@tacom.army.mil 1 / 1  
15. TOTAL: 1 / 1  
16. REMARKS The Test Plan shall be electronically delivered (email) in an editable and printable digital format.  
Draft Test Plan delivered 90 days prior to Test Readiness Review  
Government to review and provide comments 30 days after receipt of draft  
Test Plan delivered 5 days after receipt of Government comment  
To be Repro copy = electronic delivery to email: lireb@TACOM.army.mil

1. DATA ITEM NO. A007  
2. TITLE OF DATA ITEM: Training Materials  
3. SUBTITLE: Training Course Outline  
4. AUTHORITY: DI-ILSS-80872(T) 5. CONTRACT REFERENCE: C.2.4.1.1  
6. REQUIRING OFFICE:AMSTA-LC-CIFS  
7. DD 250 REQ: LT 8. APP CODE: 9. DIST. STATEMENT REQUIRED:  
10. FREQUENCY: ASREQ 11. AS OF DATE: SEE BLK 16  
12. DATE OF FIRST SUBMISSION: SEE BLK 16 13. DATE OF SUBS. SUB: SEE BLK 16  
14. DISTRIBUTION/ A. ADDRESSEE B. COPIES DRAFT / FINAL  
LC-CIFS/104 harek@tacom.army.mil 1 / 1  
15. TOTAL: 1 / 1

16. REMARKS: Revised training material shall be resubmitted to the Government each time the Government provides changes or updates to the material. Training Outline shall be delivered in an editable and printable digital format. Submit draft copies of the training course outline 270 days prior to training. The government will review and provide comments within 30 days after receiving the draft outline. Re-submit the revised draft outline incorporating all Government comments within 15 days.

TAILORING of DI-ILSS-80872(T): Para 10.1: Delete first sentence entirely. Second sentence delete "out a need for" and "with a minimum requirement for". Fourth sentence delete "and to insert training malfunctions into the equipment". Para 10.1.1: Delete first sentence entirely. Para 10.2.1 Delete "clinical" from the first sentence. Delete third sentence entirely. Para 10.2.1.1: Delete last sentence entirely. Para 10.2.1.2: Delete paragraph. Para 10.2.1.3: Delete third sentence entirely. Para 10.2.2: Delete sub-para (3) entirely.

1. DATA ITEM NO. A008  
2. TITLE OF DATA ITEM: Training Materials  
3. SUBTITLE: Lesson Guides  
4. AUTHORITY: DI-ILSS-80872(T) 5. CONTRACT REFERENCE: C.2.4.1.2  
6. REQUIRING OFFICE:AMSTA-LC-CIFS  
7. DD 250 REQ: DD 8. APP CODE: 9. DIST. STATEMENT REQUIRED:  
10. FREQUENCY: ASREQ 11. AS OF DATE: SEE BLK 16  
12. DATE OF FIRST SUBMISSION: SEE BLK 16 13. DATE OF SUBS. SUB: SEE BLK 16  
14. DISTRIBUTION/ A. ADDRESSEE B. COPIES DRAFT / FINAL  
LC-CIFS/104 harek@tacom.army.mil 1 / 1  
15. TOTAL: 1 / 1

16. REMARKS: Revised training material shall be resubmitted to the Government each time the Government provides changes or updates to the material. Training guides shall be delivered in an editable and printable digital format. Submit the draft materials 45 days prior to training. The government will review and comment within 30 days. Re-submit the revised lesson guides to the Government with all incorporated changes within 15 days.

TAILORING of DI-ILSS-80872(T): Para 10.1: Delete first sentence entirely. Second sentence delete "out a need for" and "with a minimum requirement for". Fourth sentence delete "and to insert training malfunctions into the equipment". Para 10.1.1: Delete first sentence entirely. Para 10.2.1 Delete "clinical" from the first sentence. Delete third sentence entirely. Para 10.2.1.1: Delete last sentence entirely. Para 10.2.1.2: Delete paragraph. Para 10.2.1.3: Delete third sentence entirely. Para 10.2.2: Delete sub-para (3) entirely.

1. DATA ITEM NO. A009  
2. TITLE OF DATA ITEM: Special Packaging Instructions (SPI)  
3. SUBTITLE: Shipping and Storage (S&S) Instructions  
4. AUTHORITY: DI-PACK-80121B 5. CONTRACT REFERENCE: C.2.5.2.1  
6. REQUIRING OFFICE: AMSTA-LC-CIAP  
7. DD 250 REQ: LT 8. APP CODE: 9. DIST. STATEMENT REQUIRED: A  
10. FREQUENCY: ASREQ 11. AS OF DATE:  
12. DATE OF FIRST SUBMISSION: SEE BLK 16 13. DATE OF SUBS. SEE BLK 16  
14. DISTRIBUTION/ A. ADDRESSEE B. COPIES DRAFT / FINAL  
AMSTA-LC-CIAP/268 wolakm@tacom.army.mil 1 / 1  
15. TOTAL: 1 / 1

16. REMARKS S&S instructions. Draft shall be submitted 30 days prior to validation. Government to review and provide comments within 15 days of receipt. Contractor shall respond within 20 days after receipt of Government comments. Final Submittal shall be 60 days prior to delivery of the system to the government.

S&S instructions must be submitted electronically in a format that is readable and editable by the Government.(currently MS Word Office 97).

Repro copy = Electronic delivery 3-1/2 floppy, CD ROM or email: wolakm@tacom.army.mil (preferred).